

PRACTICAL KNOWLEDGE FOR ALL



Volume 5

COURSES IN THIS VOLUME

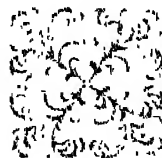
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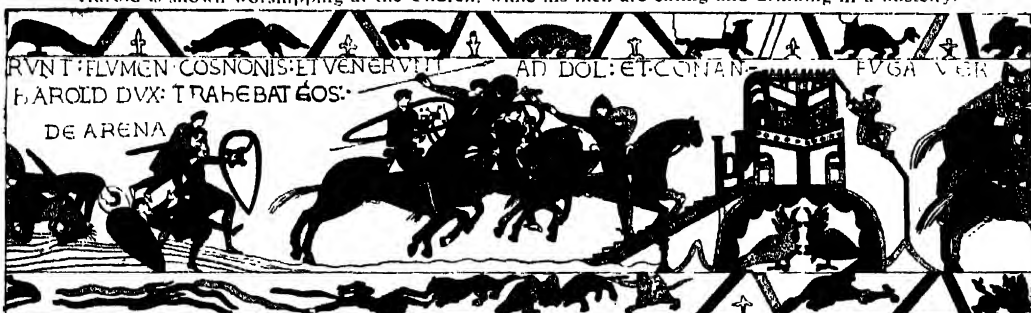




King Edward the Confessor sends Harold as his successor to the English throne with a message to Duke William : Harold and his followers start on their journey.



Harold and his party, including hunting dogs, reach Bosham, then a regular seaport, near Chichester. Harold is shown worshipping at the Church, while his men are eating and drinking in a hostelry.



Harold, invited by his host, Duke William, to join him in an expedition against Mont St. Michael off the coast of Normandy, rescues some soldiers from the shifting sands, and helps to take the castle.



Duke William, with a large fleet of transports conveying horses and fighting men, crosses the Channel to Pevensey, on the Sussex coast between Hastings and Eastbourne.

BAYEUX TAPESTRY : SOME SCENES FROM THE HISTORIC RECORD

Reproduced in the colours of the original which is 19 ins. high and over 200 feet in length

PRACTICAL KNOWLEDGE FOR ALL

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FIFTY EDUCATIONAL COURSES

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VOLUME 5



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BRITISH HISTORY

THE historical evolution of Great Britain and the unequalled contribution to world history made by the men and women of this small section of the earth's surface form the theme of the Course which follows. It is a fascinating story of the slow development of a world power of unique constitution from the unpromising elements of primitive warring tribes; a story with which every Briton should be familiar.

But to perceive British history in its true perspective, the student should have a knowledge of the history of the world as a whole, and for that reason is recommended to turn his attention also to the following Courses: ANCIENT & MEDIEVAL HISTORY, and MODERN HISTORY, in Vol. 1; SOCIAL HISTORY in Vol. 4, and POLITICS in Vol. 5.

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LESSON 1

England Before the Norman Conquest

MANY thousands of years ago Britain formed part of the Continental mainland, and the Thames was a (tributary of the Rhine.) Through its forests and across its downs passed the men of the Old Stone Age, hunters of bison and mammoths, bears and deer, gatherers of berries and roots. The Ice Age passed, and with the withdrawal northwards of the ice sheet, the North Sea and English Channel came into being and Britain became an island. Now came men of a new type, the men of the New Stone Age.

Invaders and Traders

Wave after wave of these newcomers reached the island, and although very little is now known of those early days and peoples, historians distinguish invasions by Iberians, and by Goidelic, Brythonic, and Belgic Celts—the three latter being dated approximately 1000, 400, and 150 B.C. The Goidels or Gaels were, it seems, eventually driven into Ireland and the Highlands of Scotland by the Brythons, who in turn were deprived of their conquests in S.E. England by the Belgic Celts. Some writers would have it that there were also immigrants from Egypt, or at least immigrants acquainted with its civilization; but whether this be so or not, it is certain that many centuries before Britain made its first appearance in history its people were practising the primary arts of civilization—agriculture and the keeping of domesticated animals, pottery and weaving and metal-working.

Three hundred years or so before the beginning of our era Greek traders visited Cornwall in search of tin, and there is a possibility that they were preceded by Phoenician merchants on the same errand. Britain came definitely within the orbit of the civilized world as the result of the visit by Julius Caesar, who passed over from Gaul (the modern France) in 55 B.C. In the next year he paid a second visit, made what he reported to Rome was a conquest, and then dropped the whole venture, having more pressing business elsewhere.

Britain Under the Romans

By A.D. 43 the Roman empire had been well established, and the emperor Claudius decided to add Britain to it as a province. In about thirty years the conquest was completed as far north as the Tyne on the east and the Solway on the west; on that line a chain of forts, connected by what we know as Hadrian's Wall, was built from sea to sea. This constituted the

effective boundary of the Roman dominion, though Roman armies made victorious expeditions and planted another chain of forts across Scotland from the Forth to the Clyde to overawe the Highland tribes.

Until the beginning of the 5th century the Romans kept a great garrison in Britain, which guarded it from the incursions of the northern tribes of Caledonia, while a sort of Channel fleet protected the shores against pirates from the North Sea. Military roads radiated north and west from the Thames, and the Roman peace reigned over the land. But the Celtic peoples, whether they were the Gaels of the north or the Brythons of the south, never became latinised like the Gauls across the Channel, though superficially they became Romans in parts of the south and east. The old Druidic religion had been suppressed by the conquerors as too barbaric; and when the Roman empire adopted Christianity as the leading officially recognized religion, the Britons accepted it.

At the beginning of the 5th century the Roman empire was threatened with a general break-up by the hosts of barbarians from



WHEN LONDON WAS A ROMAN CITY. Based upon material supplied by the Royal Commission on Historical Monuments, this drawing (in

While the Britons were flooding through the barrier, the ambitions of successful soldiers who dreamed of making themselves emperors. Some time early in the century the Roman troops, the legionaries, were gradually withdrawn.

Chaos ensued. The whole machinery of the Roman government went to pieces; there was no supreme controlling authority anywhere. The Britons fell to fighting each other. The Picts and Scots, hitherto bridled by the garrisons on and beyond the Wall, broke through on the north. Pirates swooped on the now undefended coasts on the east and south and even from Ireland on the west. And before another century had passed, bands of rovers from over sea had made themselves masters of much of the eastern half of the land.

Conquerors from Over the Sea

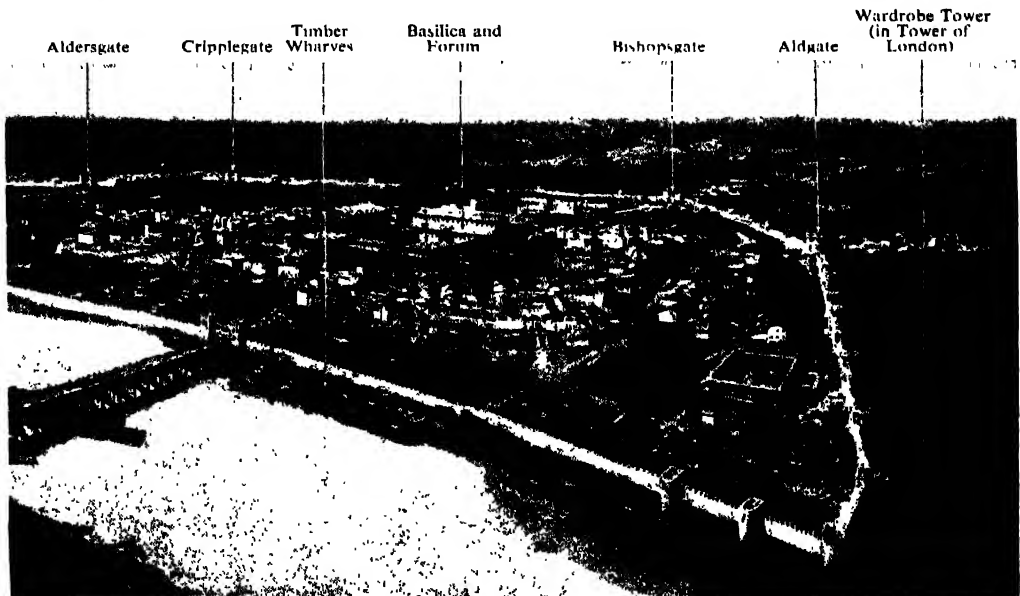
In this area it is a much disputed question how far the Britons were exterminated and how far they were enslaved or absorbed. The invaders certainly did not drive their way into Cumberland, Wales, and Cornwall; there was a broad intervening belt which neither invaders nor invaded could hold. In the Briton tradition the attack was held up by the leader whom legend has named King Arthur, who is said to have won a great victory at Mount Badon (probably in the south), and gave his name to Arthur's Seat by Edinburgh in the north. The English tradition names, as the conquerors from

over the sea, the Jutish Hengist and Horsa in Kent, the Saxon Aella in Sussex, and the Angle Ida between the Trent and the Forth. But no doubt there is more imagination than fact in the legends of those early times.

Pause in the Conquest

There was a pause in the conquest. In the 6th century came fresh swarms, sometimes quarrelling, sometimes combining, with those who were already settled—West Saxons in the south; more Angles in the north, who pushed into the midlands, Mercia, the marches between the English and the Welsh Britons, and along Wessex to the Bristol Channel; so that before the close of the century the Britons were cooped up in three separated sections—Cornwall, Wales, and Cumbria from the Dee to the Solway and on to Clydemouth. Three big battles are to be noted: Deorham, which cut off Wales from the south in 577; Dawston, which broke an attack by the Celtic Scots of the north (603); and Chester (613), which drove a wedge between Wales and Cumbria. (Until after Deorham, the English remained solidly pagan, though the Britons held to the Celtic Christian Church which had some differences from that of Rome, and Celtic Christianity had been introduced to the Scots from Ireland by disciples of Columba.)

The conquering chiefs were made kings of the conquered lands by their followers as they settled down on the soil in the villages or townships (which meant farm-buildings with the



the London Museum) by A. Forestier gives a careful, though mainly conjectural, reconstruction of the London that arose on the ashes of the city destroyed by Boadicea in A.D. 61. It was enclosed by a wall and the river was spanned by a "London Bridge" farther downstream than the structure of to-day.

cultivable land lying round them). (The king was the war-lord, the judge, and a person of general authority. There was a king in Northumbria, another in Kent, others in East Anglia, Wessex, Sussex, and Mercia. The strongest and most respected of them at the close of the 6th century was Ethelbert of Kent, whose wife was sister of the king of the Franks across the Channel. In 596 Pope Gregory I sent a band of missionaries, headed by Augustine, to convert the English.)

Victory of Christianity

As the Frankish queen of Kent was already a Christian, the mission was received with honour. After a short time Ethelbert was converted and baptised; the leading men followed his example; Augustine founded the see of Canterbury and became the first bishop of the Roman church in England. A few years later Kent had given place to Northumbria under Edwin as the most powerful of the kingdoms. Edwin was in turn converted, Northumbria following suit.

Half England was now Christian, at least in name; Wessex followed the example of Kent and Northumbria. But Penda of Mercia would have none of it: he defeated and killed first Edwin, then his successor Oswald; and the victory of Christianity was secured only when Oswald's successor Oswy killed Penda. Oswy is of special importance because it was he who settled at the Synod of Whitby in 664 that the Church in England was to be not after the Celtic pattern but after the Roman, in the obedience of the Pope, like the rest of the countries of western Europe.

The Seven Kingdoms

Northumbria remained the most powerful of the seven kingdoms which are counted (Essex being the seventh) after the death of Penda of Mercia. Numerous monasteries grew up, and did an immense amount of extremely useful work; but they, or rather the zeal for entering the religious life, had one unfortunate result. Kings who were really good and just rulers had a way of retiring into monasteries when their kingdoms were very much in need of their secular services, so that lawlessness broke loose and there was none to curb it.

Of course there was fighting between the kings, though as

yet none of the petty rulers claimed that he was king of all England; but one, Ine of Wessex, is notable for having put the customs of Wessex into a code of laws which were to be generally observed. This was in the first quarter of the 8th century; and then in the century's second half there arose in Mercia a king, Offa, who did make himself the overlord of all the other kings. In the next



WHERE ROME'S EMPIRE ENDED. A portion of the Roman Wall built A.D. 120-127 by order of the emperor Hadrian. Stretching for 73 miles from Wallsend to Bowness, it was designed as a barrier against the raiding Picts and Scots. Forts were distributed along its length, one of them (Bor-covicium) near the clump of trees shown in the mid-landscape.

generation, that is, the first quarter of the 9th century, the supremacy passed from Mercia to Wessex under its king Egbert, considered as the first king of England, and founder of the House whose blood runs in the veins of the present royal family.

England's First King

Egbert became king of Wessex in 802, when he returned to England from the court of Charles the Great (Charlemagne), king of the Franks, who had just been crowned emperor at Rome. While there, he had no doubt profited much from personal contact not only with that great ruler but also with one of the most remarkable Englishmen of the day, Alcuin, the intimate counsellor and friend of Charles and the pupil of the Venerable Bede, the finest scholar and one of the most attractive personalities of the 8th century. These two names, with that of the English Winfrith or Boniface, the "Apostle of the Germans," earlier in the century, testify to the high standard of religion and scholarship attained



SAXONS IN SUSSEX. Sompting church has a four-gabled tower of a type rare in England but not so in the invaders' homeland.

during that period in the cloisters of English monasteries.

For some twenty years after his accession Egbert was engaged in setting the kingdom of Wessex in order; and he did it so effectively that when the king of Mercia, still reputed the most powerful, attacked him, he not only defeated the Mercian but successfully aided one after another of the southern kings to break free from the Mercian yoke. The result was that by 825 all of them ("took him for father and lord")—that is, they all voluntarily accepted Egbert's supremacy. The power of Mercia was finally broken: and from that time, though the sub-kingdoms did not at once disappear, the overlordship of Wessex was not disputed by English rivals.

Incursions of the Danes

The first raiding longships of the Northmen, Vikings, or Danes, as they are commonly called, had appeared on the Northumbrian coast before the 8th century was ended. Now they began to come as the English themselves had come in the old days; and not only to England but to every river-mouth on the northern and western shores of Europe, raiding, slaying, carrying off booty and captives, but not at first seeking to settle. Once Egbert smote them in a fight at Charmouth on the Dorset coast. In the reign of his amiable and pious but not very effective son Ethelwulf, more and larger fleets came year by year. Before 866 when the third of Egbert's grandsons, Ethelred, succeeded, they had camped through a whole winter on the Isle of Sheppey. For five years they left the south alone, but made good their footing on the east from the Thames to the Tyne. Only then began the really desperate seven years' struggle (871-78) for Wessex between the Danes and first Ethelred and then his brother Alfred, who was made king after him.

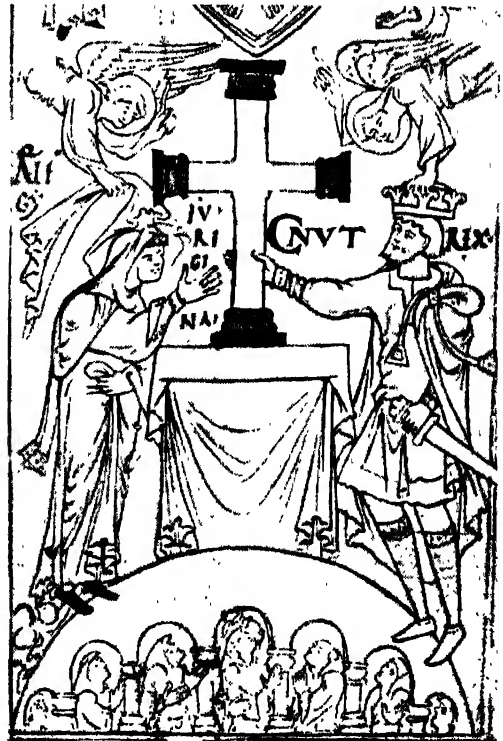
Alfred the Great

The fortunes of war swung now to one, now to the other. Alfred did not win decisively till 878, when the contest was ended by the treaty of Wedmore, which, so far from expelling the Danes, really left them masters of East Anglia, Northumbria, and part of Mercia, known collectively as the Danelaw, although they acknowledged Alfred's overlordship and accepted Christianity in place of their old worship of Odin and Thor. Alfred had peace for the rest of his life, and devoted his time to educating his people, promoting their welfare in every possible way, and earning an unqualified right to the title which the English have bestowed on him alone among all their rulers—"the Great." Not the least of the debts they owe to him was his codification of the various laws

of the English so as to bring them, outside the Danelaw, into some sort of uniformity.

Shortly after Alfred's death one of the Norse captains, Rollo, became the "man" of the French king, and duke of what was thenceforth known as Normandy.

Alfred, learning from the enemy, created a fleet which could meet invaders on the open sea and prevent a landing, and fortified towns or burghs to be a centre of resistance to attacks. Such precautions were most necessary, for though there were no more invasions from across the sea for a century, Alfred's children and grandchildren had much ado to bring the whole country under central control, the chiefs in the Danelaw not being at all accustomed to obey any superior authority. This effective control was finally won by Athelstan's victory at Brunanburh in the north, in 937, over a coalition of the Northumbrian Danes, the Scots, and Northmen from Ireland, where they had recently established colonies. Athelstan's nephew, Edgar the Peaceful (reigned 959-75), was able to claim that all kings between the



DANISH KING WHO RULED OVER ENGLAND. From 1016 to 1035 Canute, king of Denmark, was also king of England. Here he is seen with his wife, placing a cross upon the altar of a church.

British Museum, Stowe MSS.

Forth and the Channel had acknowledged themselves his vassals. For the undoubted success of his rule he was probably greatly indebted—for he was only 33 when he died—to the abilities of his chief adviser, Archbishop Dunstan, about whose name many legends have gathered.

The Danish Conquest

After Edgar came a period of disaster. His elder son Edward (the Martyr) was assassinated by Edgar's second wife, who wanted the crown for her own child Ethelred. This prince was later called the Redeless, "the lacking in counsel," for the counsellors he chose gave him the worst possible advice. The Danes began raiding again, and instead of fighting them Ethelred bought them off, imposing on the people for the purpose a heavy tax called the Danegeld (Dane-money). This incited the Danes to come again with fresh demands, and enraged his own subjects. Then he plotted a massacre of the Danes in England, on St. Brice's day, Nov. 12, 1002, which brought the Danish king Sweyn down upon the country with forces bent on revenge and conquest. As the English would not fight for him, Ethelred had to take flight to Normandy, and Sweyn's son, Canute, became in 1016 king of England as well as of Denmark.

Canute's Rule

For some 20 years Canute ruled mightily and well, and the chroniclers have nothing but praise for his government. But England was for him only a part, albeit the main part, of the Scandinavian empire which he wished to create. He had no sub-kings in England, but he divided it into five provinces or governorships called earldoms, the earls holding office from the king. As he chose good men whom he could trust to be loyal, all went well. But on his death his empire broke up and England was separated from Denmark. His sons were very bad rulers, and when they were both dead, leaving no certain heir, the English recalled from Normandy the pious son of Ethelred, Edward, called for his virtues "the Confessor."

Canute, taking no interest in Scotland, had handed over to its king Malcolm II—on terms—



EDWARD THE CONFESSOR portrayed on his Great Seal.
British Museum

the south-eastern part of the Lowlands, which in former days had formed part sometimes of Northumbria, sometimes of the Scottish kingdom. During Edward's reign, Malcolm III, nicknamed Canmore (Big-head), deposed and killed his rival Macbeth and founded the royal dynasty of Scotland, which, when it had become the House of Stuart (through Walter the Steward of Scotland who married Marjory, daughter of Robert the Bruce), succeeded to the throne of England in 1603.

No Heir to the Throne

Edward was king for 24 years; his heart, however, was in a Norman cloister, not in the English council chamber. He married the daughter of the mighty earl Godwin of Wessex, but there were no children and no heir with an indisputable claim—in fact, there was no established law of succession. It was usually a matter of course that when a king died a son should follow him on the throne, but the last word lay with the council of state, called the Witan. The Witan had elected Canute, and Canute's sons, and then Edward himself. As time went on, there was no member even of the royal house to claim the succession except a great-nephew, Edgar the Atheling (a title given to princes born in England).

Godwin the Powerful

There were three great earls when Edward became king: Siward, who was virtually an independent prince in the north, Leofric in Mercia, and Godwin in Wessex. Godwin's sons held lesser earldoms, while his daughter was queen, and between the houses of Leofric and Godwin there was intense jealousy. Godwin stood for what might be called the national party in the state, against the influence of the king's Norman and clerical friends. After long conflicts Godwin became the most powerful man in the kingdom, and on his death his son Harold succeeded to that position, winning deservedly the confidence of Edward himself; and because he was obviously the most suitable man, the Witan elected Harold as king on Edward's death in 1066.

LESSON 2

England Under the Normans

WHEN Harold was elected king he was the one man in England whose proved capacity as a statesman and soldier fitted him for the office ; but it was only in the south that he could rely on loyal support. The only other Englishman with a shadow of a claim was the boy Edgar Atheling. But Sweyn of Denmark might claim as the heir of Canute and could count on the backing of half the Danclaw if he chose to come forward—and a still more dangerous candidate, though one whom no Englishman could favour, was the powerful and practically independent prince, William, duke of Normandy, great-nephew of Edward's mother.

William Claims the Crown

William vowed that Edward had promised him the succession (though Edward had no power to do so), and Harold had been trapped into taking a solemn oath that he would support William's candidature—the breaking of that oath being regarded as a terrible sacrilege. Sweyn made no move ; but William at once claimed the crown, gathered an army of adventurers who expected to be handsomely rewarded with big estates in England, and procured from the Pope a blessing on his banner as the Church's champion against the perjured Harold. While Harold was drawn to the north to meet and crush an invasion by the Norwegian king Harald Hardrada, William landed his army in Sussex. Harold, returning in haste, was slain, and his Wessex army shattered at the battle of Hastings or Senlac, Oct. 14, 1066. The forces from Mercia which should have joined the king were not yet on the march.

The Norman Conquest

William advanced on London, cutting it off from the Mercians by a march across the Thames from Wallingford to Berkhamsted. Resistance was impossible. The Witan elected Edgar, then thought better of it, and offered the crown to William as the lawfully-elected king. He promised to rule according to the laws of England, and was crowned in Westminster Abbey on Christmas Day, 1066. The obvious fact remained that he was king by right of conquest and nothing else ; the election was no more than a formal farce. The estates of all the rebels who had actively supported the usurper Harold were forfeited and bestowed upon William's Norman, French, Fleming, or Breton followers.

William won the crown because the English had failed to stand together, but for five years

there were repeated risings in various areas. After each rising there were fresh forfeitures, the penalty of rebellion. The last revolt was long and fierce, and was crushed with a devastating ruthlessness. When it was finished, Normans instead of Englishmen were lords of most of the manors in the country, and many of them individually were lords of several manors in different districts. After 1071 there were no more risings of the English against William, though Normans occasionally rose in revolt. It was not the Norman king so much as the Norman lords who oppressed the people.

What the Conquest Entailed

What in fact did the Conquest entail ? William would have said without hesitation that he kept his promise to rule by the laws of England—but by those laws as they were understood and interpreted not by English custom but by his Norman lawyers. He ruled with the advice—though he was not bound to take it—of the council or Witan ; but the character of the great council was changed because most of its members, lay or clerical, were not English, but Normans, with Norman ideas and habits of government ; and the authority of lords over their tenants was much greater in Normandy than it had been heretofore in England. And whatever professions anyone might make, the lords were foreign conquerors who treated the English as a conquered people.

The Manor

We have spoken of lords and manors and tenants. The manor was a Saxon institution that was developed and regularised by the Normans. Generally speaking, it corresponded to the old agricultural settlements, the tuns, hams, wicks, and so on, into which the country had been divided, more or less corresponding to the ecclesiastical parishes. Each manor formed a virtually self-sufficient community, which grew its own crops, pastured its own sheep and cattle, and provided its own fighting-men for the shire levy. After the Conquest the lord of the manor was generally a Norman. Under him was often the steward, a bailiff who acted as his manager, if the manor was large enough to merit such an official.

Next in the scale came the freemen, sometimes Norman private soldiers who had come over with the Conqueror, and sometimes Englishmen who, before the Conquest, may have had land of their own. They did occasional work for the lord of the manor but not so much as the villeins, the largest class, who could not

leave the manor or have their sons educated without the lord's permission, though they themselves were not so much in bondage as the serfs. These last formed a slave class. Freemen were perhaps most numerous in the eastern counties, where survived the strong, healthy spirit of the old Norse democracy; from Hereward through Ket to Cromwell this was to be a focus of rebellion against tyranny and oppression. Villeins (cottars and bordars) and serfs were to be found largely in the west, where they may have been descended from enslaved Welsh and other people of Celtic extraction.

Land-holding and Dues

The bulk of the manor was usually, after the Norman Conquest, the lord's own property, held by him from his overlord and from the king, who might himself indeed be that overlord. Villeins and serfs worked that land for him and received strips of land of their own, with a grant from the lord of tools to work with. It should be remembered that nearly all the land in England had originally been folkland, so that the lords were usurpers, if legalised usurpers.

Very irksome and heavy were the dues and duties of the unfree. Their "week-work" usually amounted to two or three days a week in the lord's land. On the top of this came "boon-work" for the lord at such particularly busy seasons of the year as ploughing and harvest. From the lord they had to obtain permission to marry a daughter or educate a son (generally for the priesthood, the great and virtually the only career open to talents in the Middle Ages). At Easter they often had to give fish or eggs, at Christmas, poultry, to their lord. His pigeons stole their grain, and his miller charged for the grinding of their corn.

As the Middle Ages wore on, serfs and villeins were gradually freed, but no big change came until the shortage of labour caused by the Black Death hastened this manumission. There were still a few villeins in the land as late as the reign of Elizabeth I.

Growth of Feudalism

Another consequence of the Norman Conquest was the establishment of what is called the feudal system—which, however, had shown signs of growth some time before, particularly under the Confessor, whose court was filled

with Continental men and ideas. The basis of it was that all land was the king's property, but that he had granted estates to individuals conditionally on their undertaking to render him certain military and other services; they were his "men," vassals, barons who did him "homage." They might in turn bestow the land or part of it on other people who became their men, holding the land from them. In the system set up by the Conqueror, these sub-vassals owed homage to the king first and to the immediate overlord only after him; they had to serve the king if need be against his vassal, not the vassal against the king. Otherwise a vassal with many vassals of his own might become a menace to the king.

Another safeguard of the crown was that the richest of the barons did not have all their estates close together, but scattered through the country. Still it was very difficult for a king who had to spend a great deal of his time in Normandy controlling his vassals there, to maintain a strong control over his powerful vassals in England. William and his two sons, Rufus and Henry I, however, were strong rulers who, if barons combined to rebel, crushed them with severity.

"Lion of Justice"

Henry I (reigned 1100-35), in particular, established law and justice, not so much because he was virtuous as because he was shrewd enough to know that a king can be prosperous only by giving prosperity to the land he rules, and that the land in which lawlessness reigns cannot be prosperous. Therefore he came to terms with Anselm, archbishop of Canterbury, with whom Rufus had quarrelled; protected the weak by sending to every part of the country his own justices, thus ensuring fairer and speedier justice than was likely when tenants had only their lords to seek justice from, and even well-to-do men had been beggared by having to follow the king's court for many months before their suit could be heard; and improved the system under which the king's revenues were collected, so that men called him the Lion of Justice. But much of what Henry had done was temporarily lost when, on his death in 1135, his nephew Stephen snatched the crown from his daughter Maud. Stephen promised many reforms, but the barons proved too strong for him and his reign was a period of anarchy.

LESSON 3

Plantagenet Builders of a New England

SHEER exhaustion brought comparative peace in the last days of Stephen. In 1154 he was succeeded by Henry Plantagenet, count of Anjou, the son of Henry I's daughter, Matilda or Maud, and her second husband, Geoffrey, count of Anjou. Through his mother, Henry was duke of Normandy; through his wife, Eleanor of Aquitaine, he was duke, or count, of so many provinces that he was lord of half France, though he held those provinces as vassal of the French king; his English kingdom was wholly independent of France. For centuries to come the foreign policy of the kings of England was determined by the fact that they were at once the rivals and the vassals of the kings of France.

Swift Judgment, Swift Action

Henry was just the man England needed--one with a genius for organization in a land where only the foundations of organization survived, one to whom disorder was intolerable; fearless and self-confident; shrewd and swift of judgment and still swifter of action. The country was sick of lawlessness, ready to give wholehearted support to anyone who would restore order and justice. Before two years

were over he had crushed the most turbulent, over-awed the rest, and won over all the order-loving elements in the community. He pulled down castles that lawless barons had built for themselves in the days of the anarchy. He revived the royal courts of justice that his grandfather had set up. He reorganized the shire levies, so that every man who was called up by the sheriff (shire-reeve, the king's officer who was appointed for this and other administrative purposes in each shire) was bound to appear in arms according to his means.

Henry even tried to bring the clergy (not only ordained priests but all who were able to read and write and claimed "benefit of clergy," as subject only to the Church's laws) into the jurisdiction of the king's courts. This involved

him in a long struggle with Thomas Becket, ending with the murder of that archbishop in 1170, in Canterbury Cathedral, by some of the king's knights. This was the last thing that the king intended, but the murderers made it their justification that they had acted upon words Henry had spoken in a moment of anger. It was the dead archbishop who won the victory; Church courts continued until the Reformation, 350 years later. The king succeeded in setting up in Ireland a sort of English government, but his rule did not in fact extend outside a district called the English pale. He also made William the Lion, king of Scots, who was taken prisoner while raiding across the border, acknowledge him as overlord.

Richard the First

The close of Henry's reign was greatly troubled by quarrels with his turbulent sons, with whom he was actually at war when he died in 1189. Richard I (Coeur-de-Lion), who succeeded him, cared little for England, much for Aquitaine, and most for Palestine, where Saladin had just captured Jerusalem. Richard went on crusade, was captured on his way home, and spent less than six months of his ten years'

reign (1189-99) in England, where matters were generally well and wisely managed for him by the minister Hubert Walter. Richard is a great figure in romance, but England has cause to be grateful to him mainly for absenting himself and putting Walter in control. He was killed while fighting a rebellious vassal in Aquitaine, and the barons recognized as king his brother John (reigned 1199-1216) instead of his nephew, Arthur of Brittany, whose title, according to modern ideas, was the better, but who was only a boy.

King John and Magna Carta

John has been described as the worst king who ever ruled in England. He had brilliant abilities, which he occasionally brought into play in brief spasms of energy, but he was the



MURDER OF BECKET. This early 13th century drawing shows the archbishop assailed by Henry's knights in Canterbury Cathedral, Dec. 29, 1170.
British Museum, Harleian MSS.



RICHARD COEUR-DE-LION'S STRONGHOLD. Ruins of Château Gaillard ("Saucy Castle") at Petit Andelys on the Seine, built in 1196 by Richard I to protect Normandy from the French. It was captured, however, by the latter in 1204.

Photo, Levy-Neurdein

slave of his own passions and vices. He was a tyrant and a murderer, faithless, reckless, vindictive, and cruel; but England was the gainer. For he made himself so generally detested that all the best elements in the country, united in opposing his oppression and forcing him to seal, in 1215, the Great Charter (Magna Carta), which proclaimed the fundamental principle that no man, high or low, king or noble, gentle or simple, may override or break the law of the land with impunity, and that none has power to change the law without the general assent.

The Separation from Normandy

This was when John had already been king for 16 years. Long before that he had lost Normandy and most of the French fiefs which had come to the Plantagenets with his mother. Disgust at the king's misrule, and especially at the murder of his nephew, Arthur of Brittany, made the barons of England refuse to fight for him when the barons of Normandy sided against him with his overlord, Philip II, king of France, who declared the dukedom to be forfeited. After this, few held baronies both in England and in Normandy, so that the barons of Norman blood in England were very soon looking upon themselves as Englishmen and on England as their country. Though, to be rid of John, half the barons were trying in the last year of his life to make Louis, the crown prince or dauphin of France, king in his place, John was no sooner dead than they rallied to support his young son, Henry III (reigned 1216-72).

After John's death the country settled down

into reasonable order and progress under William Marshal, and then Hubert de Burgh (who had both been loyal to John without upholding his crimes), the new king being too young to act for himself. When Henry grew up he was extremely pious and fell under the influence of an ambitious bishop, who surrounded him with foreign favourites. Then he married Eleanor of Savoy, who brought over a number of her kinsmen, and thus matters went from bad to worse. The leadership of the opposition to the foreigners passed to the earl Simon de Montfort, who was a foreigner himself.

At last Simon seemed to have got the upper hand. After a victory over the royal forces at Lewes in 1264, he called, not the ordinary great council, attended only by barons and ecclesiastics, but one which included elected burgesses from some of the towns. He had not really won, however. Shortly afterwards some of the nobles who had been his followers left him for the king, and he was killed at the battle of Evesham (1265) fighting against a royal army commanded by the king's son Edward. Henry III reigned for nearly 60 years. Nearly 50 years of his reign had passed before Montfort's rebellion, and there was no real resistance to the king after the earl's death.

Edward the First

When Henry III died in 1272, his son Edward was away on a crusade, but the government went on quietly. Norman and Saxon elements were now fused, and Edward, bearing an old English name, might fairly be counted the first English king since the Conquest. In his

reign (1272-1307) he united Wales, but failed to unite Scotland, to England; he put the law into clear shape; and he transformed the council into parliament.

Edward's aims as a lawmaker were to make certain what was uncertain in the law and, in doing so, to fix upon it the interpretation which would best strengthen the crown against turbulent barons. As Henry II had used the council to express what thereafter no one could refuse to recognize as common consent to his measures, so Edward used parliament; and he gave parliament a shape which made it represent a much wider body of public opinion than the old council, which in practice had consisted mainly of a few great barons, bishops, and superior abbots, and some of the lesser barons called knights of the shire, two of whom were selected from each shire by the sheriff—not elected by vote. Montfort had, for the first time, added two burgesses elected by certain boroughs, boroughs being the larger towns which had charters of self-government; Edward made this innovation permanent, and his knights of the shire were not chosen by the sheriff but were elected.

The Model Parliament

The first parliament in which this was worked out completely was called in 1295, and is known as the Model Parliament, because the model remained unchanged for 500 years. These elected representatives were called collectively the commons. The greater barons had been summoned by a personal letter from the king, and this summons now became a distinctive right passing from generation to generation. Those so summoned were the lords or peers, and early in the reign of Edward III the custom was established by which lords and commons transacted their business in separate chambers. The clergy, too, separated from parliament as a body and sat in convocation to legislate for the Church and settle their own contributions to the royal exchequer, though bishops and certain abbots still sat with the lords. Whatever laws were passed in parliament and confirmed by the king became thenceforth the law of the land, which could be altered only by another act of parliament.

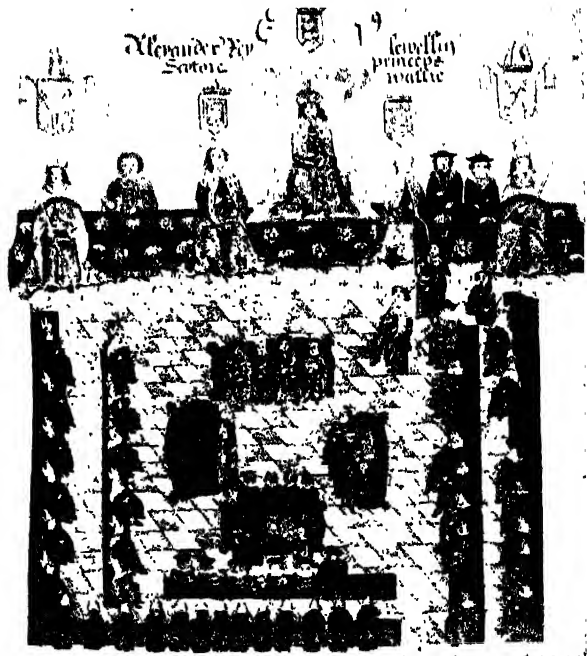
Edward I's legislation was mainly concerned with fixing the laws about the succession, inheritance, and alienation of land, and the claims the king might lawfully enforce as a matter of course for money to be paid to the royal exchequer, out of which all the

expenses of government had to be paid. This being settled, if he found himself in need of more for whatever purpose, as he was quite sure to do, he must ask for it from parliament; which presently had the effect that if parliaments were dissatisfied with the way in which the money was being spent they could refuse his request. Parliament learnt that, as against the king, it possessed "the power of the purse."

Legislation and the building up of parliament were not accomplished at a stroke; they were going on throughout the reign. But Edward also wanted to unite the whole island into one dominion. Welsh princes and Scottish kings had sometimes admitted, but more often refused to admit, some sort of English overlordship. Edward succeeded in forcing the Welsh to submission, though only by hard fighting; he planted garrisoned castles at strategic points, mostly along the north and south coasts of Wales, and in what came to be called the Welsh Marches.

Origin of the Scottish Kingdom

Scotland was a bigger country and a bigger task, and it was harder to find a legal excuse to interfere there. Edward found his chance when the Scots nobles, many of whom had estates in England in respect of which they



EDWARD I AND PARLIAMENT. Here Edward I, accompanied by the Prince of Wales and Alexander III, king of Scotland, is presiding over a session of the royal council.

From Pinkerton, "Iconographia Scotica"

were already his vassals, appealed to him to arbitrate between rival claimants to the succession to the throne on the death, first of Alexander III, and then of Alexander's daughter Margaret. The Scots kingdom had grown out of the union of Dalriada, the first Celtic Scots kingdom, with the Pictish kingdom in the centre and north-east. The English had never absorbed the Celts north of Solway ; and, though the eastern lowlands formed part of Northumbria, the Scots kingdom had drawn them in, so that in the time of Canute the Tweed had become the boundary between England and Scotland. Malcolm Canmore secured the crown a little before the Norman Conquest. He married Edgar Atheling's sister, the high-principled St. Margaret, who did much to anglicise the lowlands. The highlands would have remained entirely Celtic if a number of Vikings had not established themselves in the western isles and far north.

Normanised Lowlands

The kings of Scots had never exercised a real authority beyond the highland line, but they did rule in the lowlands. Malcolm's daughter was wife of Henry I of England and grandmother of Henry II ; and his third son, David I, was an enlightened and successful prince, to whose benefactions the Church in Scotland owed much. But, by way of civilizing the country, he bestowed large estates on Norman barons from England, so that the lowlands were to a great extent normanised as well as anglicised. His direct descendant, Alexander III, who was reigning when Edward became king of England, was far too strong to be attacked ; but when Alexander's line died out there was none nearer the throne than John Balliol, Robert Bruce, and John Comyn, all Norman barons of England as well as Scotland, and all three descended from daughters of the younger brother of Alexander's grandfather, William the Lion.

Edward then agreed to arbitrate between the claimants, but definitely as suzerain. The successful candidate must hold the Scots crown as a vassal of the king of England, earlier kings

of Scots having done homage to kings of England. The Scots agreed, regarding the claim as a mere formality. The award fell, rightly, to John Balliol. Then, to their surprise, the Scots found that for Edward the claim was not a formality, but a very real acceptance of his authority. Balliol revolted ; the revolt was crushed, and Edward resumed the crown which his vassal's rebellion had forfeited. The estates of Balliol's supporters were forfeited ; English officers and garrisons were sent to Scotland, and behaved very much like the Normans when they conquered England.

Attempted Conquest of Scotland

There was no king to lead the Scots, but they found a leader in William Wallace, who gathered followers, attacked the English, and for a time drove them out. Edward vowed, and took, vengeance. Wallace's levies were overwhelmed by the English archers at Falkirk, and later he himself was captured and taken to England to die the ignominious death of a traitor. Leaderless Scotland was ground under the heel of her English master, till Robert Bruce, grandson of the first Bruce claimant, having committed a murder for which he could not hope to be pardoned, raised the standard of revolt, claimed the crown forfeited by John Balliol, and renewed the war of liberation. The old king gathered a great host to crush the rebel once for all ; but before he could reach Scotland he died.

On Edward's death in 1307 the army of conquest was disbanded. For six years Edward II was fully occupied in quarrels with his barons, while king Robert in Scotland was gathering adherents and capturing one by one the English strongholds until Stirling only was left. Then Edward II gathered the largest English army that had ever taken the field, marched into Scotland, and was defeated on the plain of the Forth, a few miles east of Stirling Rock, in the year 1314, at Bannockburn. The independence of Scotland was won, though 15 more years passed before the English regents signed the treaty of Northampton (1329).

LESSON 4

Edward III and the French Wars

AFTER one of the ablest of English kings, Edward I, came one of the most incapable. Edward II (reigned 1307-27), though a man of some culture, was feeble, obstinate, and vacillating, with no sense of responsibility as a ruler, though he had apparently no wish to play the tyrant. Throughout his reign he was the tool of unworthy favourites. Barons who had feared and respected his father

had neither fear nor respect for the king or his chosen advisers, and tried to substitute the misrule of a self-seeking clique for that of king or parliament.

Edward's ceaseless quarrels enabled Bruce to secure Scottish independence ; when the barons got the upper hand, their rule was no better than his ; when he got the upper hand, his favourites ruled no better than they. In a



SURRENDER OF CALAIS. This picture from an illuminated 15th century manuscript of the "St. Albans Chronicle" depicts the well-known incident of the arrival of the burghers of Calais in shirts and with halters round their necks to make submission to Edward III, who was induced to spare their lives only by the entreaty of his consort, Philippa of Hainault.

Lambeth Palace Library

final revolt, in which his own wife, Isabella of France, joined Roger Mortimer, the most ambitious, turbulent, and unprincipled of the barons, he was taken prisoner and forced to abdicate in favour of his 16-year-old son, who was proclaimed king as Edward III. Mortimer and Isabella ruled in his name; but their rule, beginning with the murder of Edward II, was the worst of all. At length, the young king and his friends, by a sudden *coup d'état*, captured Mortimer and hanged him. As more than once before, barons and people alike were sick of civil war and misrule, and Edward III (reigned 1327-77) began his real rule with the whole country at his back.

The French Wars

The French wars are the most spectacular feature of the long reign of Edward III—wars which for 20 years brought repeated triumphs and then ended in futility and doleful failure. They are typical of the romance and glitter of medieval warfare; but there was a serious purpose behind them, which should be understood.

Though the French possessions of the first

Plantagenet kings had dwindled under John and Henry III, Edward I had still been lord of Guienne and Gascony. French kings had worked on a consistent policy of annexing their vassals' fiefs on every available pretext. Edward I had held his own against them; but something had been lost under Edward II.

The Hundred Years War

Charles IV, the last male of the reigning house of Capet, died in 1328. The French decided that the succession lay in his cousin, Philip of Valois, but it was possible for Edward, as the son of a sister of Charles IV, to claim that he was the heir. The claim was made, but not pressed. Philip VI became king, and continued the old policy. Edward had to fight or else to lose his French possessions, which from a commercial point of view were of value to England, so he advanced his claim to the French throne, and in 1337 began the Hundred Years War.

A naval victory at Sluys (1340) gave the English command of the Channel.

Six years later Edward led a raid into France. The gathering of a big French force caused him to retreat hastily towards Flanders; but he was overtaken at Crécy, near the Somme, where he turned at bay and inflicted on the French a tremendous and overwhelming defeat (1346). This was mainly due to the longbows of the English and Welsh archers.

Capture of Calais

The capture of Calais next year gave England a foothold in France, and a market for her commerce, which she retained for 200 years. In this siege cannon were used, although they were not particularly effective. Calais was starved into surrender. Although Edward eventually spared the lives of the six chief burghers, who had been condemned to death, he drove all the French out of the town and occupied it with his English subjects. In 1356 Edward's son, the Black Prince, won a victory over a French force of vastly greater numbers at Poitiers. This led to the peace of Brétigny, whereby Edward acquired his fiefs in full sovereignty.



AFTER THE BLACK DEATH. This miniature showing a farmer and his wife working their own small holding, done in the 14th century after the Black Death, probably reflects its economic results in England.

British Museum; Royal MS. I. E. iv

In 1369 war broke out again, each side claiming that the other had broken the treaty. But the tale of English victories was over. The mental powers of Edward and the physical powers of the Black Prince had broken down. Every campaign was a failure; and when Edward died in premature dotage, his possessions in France—except for Calais—were no greater than they had been when the war began.

During his long reign there were many economic developments. At first the French wars, by using many men abroad and reducing available labour at home, brought economic prosperity to the country. In addition Edward aimed at building up sound trading conditions, particularly with regard to the woollen industry. Though as early as the 12th century there were weavers' guilds in England, cloth-working had declined, and the king took measures to revive the manufacture. He invited to England weavers from Flanders, many of whom settled in Winchester, Bristol, London, and other centres, and forbade the importation of foreign wool. At this time England was virtually the only country supplying wool to western Europe. The wool staple was transferred from Bruges to England, though afterwards placed at Calais. The object of a staple town was that all exported wool should pass through it so that the king's revenue on it could be secured.

The prosperity of this period was checked by the pestilence of the Black Death (1348). The plague had an enormous death roll, and far-reaching economic results. At least one-third of the population in England is said to have perished. There was an unprecedented scarcity of labour, and wages rose—for men as much as 50 per cent. and for women 100 per cent. The small freeholder was able to buy his land from his lord because the lord could not afford to pay labourers to work it. But the lord valued services more highly and was less willing to commute them, which roused bitter discontent in the villeins, who, unable to pay rent for their holdings, deserted them and migrated to the towns. Discontent was widespread at the end of Edward's reign.

His successor was Richard II (reigned 1377-99), a boy of ten, son of the Black Prince. His uncles and other nobles quarrelled for control of the government. The discontent came to a head and there was a rising of the peasantry in 1381, chiefly in the Home Counties and East Anglia, headed by Wat Tyler, John Ball, and Geoffrey Lister. Tyler's insurgents marched on London; but the boy king persuaded them to disperse by making promises



DEPOSITION OF RICHARD II. Henry of Lancaster returned to England in 1399 ostensibly to recover the patrimony of which he had been deprived, but he obtained such support that he was able to make a bid for the crown. On September 30 Richard II signed a deed of abdication, whereupon parliament deposed him and installed Henry—shown here wearing a high cap—on the throne as Henry IV—the first of the Lancastrian kings.
British Museum, Harleian M.S.

which were never kept, and the unfortunate peasants were severely punished.

As he grew older, Richard chafed increasingly against his uncles' control and, like Edward II, put his trust in favourites—with somewhat similar results, because he antagonised most of the nobles. But, without open war, he managed to get the upper hand and for a time used his power with moderation. Then there came a sudden change. He turned on one of his uncles, Thomas, duke of Gloucester, charged him with treason committed in the earlier part of the reign, and arrested him. While in custody, Gloucester was murdered. The nobles took alarm; two of Richard's former opponents then charged each other with treason. One of these was his cousin, Henry, earl of Hereford and Derby, the son of Edward III's oldest surviving son, John, duke of Lancaster; and the other was Thomas Mowbray, duke of Norfolk.

Richard seized the opportunity to banish both. When they were gone, he imagined that he was too strong to be resisted. John of Gaunt, duke of Lancaster, died, and Richard seized the inheritance which belonged by right to the exiled Henry of Hereford, and departed to Ireland. Henry returned, avowedly to claim his inheritance. But when Richard got back to England he found himself virtually deserted. Henry's demands had risen, and Richard was taken to London and forced to sign a deed of abdication. Henry then claimed the succession as the grandson of Edward III, and he became king as Henry IV in 1399.

LESSON 5

Wars and Revolts of the 15th Century

PARLIAMENT, in thus crowning Henry, reverted to the old right of election and to the precedent supplied by the deposition of Edward II. Richard's heir by right of succession was Edmund Mortimer, great-grandson of Lionel, duke of Clarence, third son of Edward III. Henry was the son of Edward's fourth son, John of Gaunt. In passing over the claims of Edmund Mortimer—who was a small boy at the time, but who became a rallying-point for rebellion—and in the acceptance of Henry as king, parliament gained a hold upon the dynasty of Lancaster. The constitutional problem was here solved by parliamentary choice, and not by hereditary right of descent. From the accession of Henry IV the members of the royal council were nominated, and their salaries, rules, and procedure governed by parliament.

The Percy Rebellion

Henry's reign was consequently a troubled one. He was bound to consider the wishes of parliament to a greater extent than his predecessors. After a rebellion in 1400 had been suppressed, the unfortunate Richard died in prison; it was generally believed that he had been murdered, but Henry declared that Richard committed suicide by voluntary starvation.

A quarrel with the most prominent of his former supporters, the earl of Northumberland, over the ransom of Scottish prisoners taken in a border raid, was the occasion of a dangerous revolt, nominally on behalf of Edmund Mortimer, the young earl of March. Northumberland's son, Henry Percy—known better as Harry Hotspur—had married Edmund Mortimer's aunt. The Percy family raised an army against the king, but were defeated at the battle of Shrewsbury, where Hotspur was killed. Northumberland, taken prisoner soon after, was pardoned on taking an oath of complete submission. There were no more active insurrections, except in Wales, where rebels headed by Owen

Glendower—who wished to make Wales independent and proclaimed himself its prince—were in arms throughout the reign.

Victory at Agincourt

Henry IV died, a worn-out man, before he was 50. Henry V (reigned 1413–22) added lustre to English arms by renewing the war with France, winning a victory at Agincourt in 1415, reducing Normandy by a systematic succession of sieges, making himself master of northern France by alliance with the powerful Philip, duke of Burgundy, and securing—on paper by treaty with the half-mad king, Charles VI, whose daughter Katharine he married—the succession to the throne for himself and his heirs. At the age of 35 Henry V died on campaign, leaving the French and English crowns (Charles VI also died within a few weeks) to the year-old infant, Henry VI (reigned 1422–61).

Thirty-one years later, of all that the English kings had ever held in France, nothing remained but Calais. After 1438 the gains were all on the French side. With a mistaken sense of national pride, the English governing class fought on until 1453, although the country grudged all money and men sent across the Channel. Siege artillery was used effectively by the French to batter the English out of their various strongholds.

End of the Hundred Years War

Henry's brother John, duke of Bedford, appointed regent in France, had striven to carry through the policy of conquest bequeathed to him. He was hampered by the intrigues of his brother Humphrey of Gloucester, Protector in England, on behalf of the infant king. When Joan of Arc had led the French to victory after victory—until she was captured by the Burgundians, condemned as a heretic by an ecclesiastical court, and handed over to the English to be burnt at the stake (1431)—matters went continually from bad to worse. Bedford died; Burgundy



HENRY V, here depicted by an unknown artist, was devout and pure of life, with a stern sense of duty. Shakespeare's picture of him as a rake in his youth must therefore be discounted.

National Portrait Gallery

joined the French king Charles VII, whom Joan had crowned; the English nobles broke up into factions, and after a desperate effort to save Guienne in 1453, the Hundred Years War was finished.

Beaufort and Gloucester

From 1422 to 1447 England was disturbed by the rivalry of Beaufort and Gloucester. The Beaufort family was headed by the bishop of Winchester, chancellor of England and afterwards cardinal, and his brothers, who were illegitimate half-brothers of Henry IV. After Bedford's death the Beauforts became a peace party; Gloucester, as leader of the war party, was supported by young Richard, duke of York. The last named derived his title through his father from a younger son of Edward III, but through his mother was heir to all the claims of Edmund Mortimer, who had been passed over when Henry IV was made king. Gloucester fell into disgrace. He had been forced to renounce the protectorship when Henry VI was crowned. York was sent to France, and the Beauforts dominated England and negotiated the king's marriage with Margaret of Anjou, a princess of strong personality, who was henceforth closely associated with their party.

Wars of the Roses

The marriage was very unpopular; Gloucester was murdered; his death made Richard of York heir presumptive to the throne, as there was no other prince of the blood royal—except the Beauforts, who meant to assert a claim should the king die childless. Richard showed no disloyalty, but claimed a share in the government due to his position. There was a prolonged political struggle between him and Margaret. The prospect of his hereditary accession faded with the birth of a son to Henry and Margaret, but parliaments of 1450–51 were strongly on the side of Richard. At last war broke out between the supporters of Lancaster and York, and Richard claimed the succession in priority to the Prince of Wales, as the true heir of Edward III. Margaret was ready to fight for her son,



JOAN OF ARC AND CHARLES VII. As early as 1424 Joan of Arc (1412–31) first heard the angelic voices calling to her to free France from the English. Not until 1429, however, did she secure the audience with the Dauphin at Chinon (illustrated in this 15th-century Flemish manuscript), when she persuaded him of her divine commission.

British Museum, Royal MS.

and the first of the 14 battles of the "Wars of the Roses" was fought at St. Albans, 1455; in this York was victorious. Richard was defeated and killed at Wakefield (1460). Then his son Edward defeated a Lancastrian force at Mortimer's Cross, marched to London, where he was proclaimed king, and shattered the Lancastrians at Towton (1461). Henry and Margaret fled.



RICHARD III. One of the "villains" of English history, he was born in 1452, and seized the throne from his nephew Edward V, in 1483. He was killed at Bosworth in 1485.

The Kingmaker

Edward IV (reigned 1461–83) owed his crown in great part to his cousin, Richard Neville, earl of Warwick, who is called the kingmaker, and who was the real ruler until he discovered that Edward was planning to get rid of him. In his wrath he went over to the Lancastrians, drove Edward out of the country, and set Henry—who had been captured some time before and shut up in the Tower—on the throne

again (1470). But Edward returned, defeated and killed Warwick at Barnet, and completed the overthrow of the Lancastrians at Tewkesbury (1471). Henry, back in the Tower, was murdered; his son, the Prince of Wales, had been either killed in the battle or captured and murdered afterwards. Thus the dynasty of Lancaster came to an end.

To resist Edward was now impossible. The Lancastrian nobles were mostly dead or in exile; they had no figurehead except the boy Henry Tudor, earl of Richmond, an exile in Brittany, whose mother was a Beaufort. Edward reigned as an absolute monarch for 12 years. Then he died suddenly. His brother Richard of Gloucester seized the crown before the child-heir, Edward V, could wear it. It was believed that the boy king and his brother were murdered in the Tower. Present knowledge of

Richard's reign and character is derived entirely from the historians of the next reign, who painted him in the blackest possible colours and certainly attributed to him crimes which he could not have committed; and Shakespeare has made that picture indelible.

However exaggerated this view may be, Yorkists at home conspired with Lancastrians abroad to set Henry of Richmond on the throne in Richard's place and to end the feud of the Roses—the red rose was the badge of Lancaster and the white that of York—by marrying him to Edward IV's daughter Elizabeth (a marriage which took place in 1486). When Richmond landed at Milford bay, Richard, marching to meet him, was deserted by half his followers, and he lost his crown and his life at Bosworth (1485). So fell the last of the Yorkist kings, and the crown of England passed to the Tudors.

LESSON 6

England on the Eve of the Reformation

THE reign of Henry VII (1485–1509), the first Tudor king, marks the transitional period from the medieval to the modern world. In 1492, Christopher Columbus, backed by the Spanish monarchy, set sail west instead of east to find a new trade route to India. In ten weeks he had reached the Bahamas—and suddenly the size of the known world had expanded with the addition of a new hemisphere. Spain and Portugal reaped the immediate material wealth and glory. England had no commercial share in the discoveries till after the middle of the 16th century, owing to the short-sightedness of Henry, who might himself have been Columbus's patron; but the effect on the mental attitude of her scholars and thinkers was revolutionary. Expansion of ideas followed the physical widening of space.

During the 15th century the disintegration of old ideals had proceeded: now the Renaissance was emerging. Printing presses were at work in England; the new learning and revival of the classics were advancing quickly at Oxford, and so far had not come into opposition with the Church. Diplomacy was making headway in foreign affairs; but the theory of the balance of power was not developed till the reign of Henry VIII.

Henry Tudor

The Wars of the Roses proved to be the death-blow to English feudalism. Henry Tudor possessed a strong character and remarkable astuteness. He had the highest reputation for statesmanship, and restored England's lost position as a European power; in addition, he put his own house in order. He founded a

strong dynasty, and set the keynote of a successful policy at home. Lack of funds and the slenderness of his title to the throne might have kept Henry dependent on parliament. By the substitution of fines and confiscations of property for the death penalty for treason, and by forbidding the maintenance of large bodies of retainers, he filled his exchequer and broke the power of the barons. By marrying Elizabeth of York, representative of the rival house, he strengthened his title to the throne.

Ruthless Individualists

At the opening of his reign, despite the wars, the rural population in England was moderately prosperous, but unfortunately did not retain prosperity. The growth of the wool industry had increased the demand for sheep; consequently arable land had been turned into pasture, requiring less labour; and much common land had been enclosed, thus depriving the small tenant of his free grazing. Justifiable discontent arose, finding literary expression in Latimer's sermons and Sir Thomas More's *Utopia*. The capitalist who speculated in land brought about the abandonment of rural districts by the unemployed and the increase of out-of-work poor in the urban districts. The Tudor period was a great time for the ruthless individualist. The commercial connexion between landlord and tenant took the place of the feudal tie—cruel enough often, but still entailing personal responsibility—and the owner valued his tenants solely on account of the profit they produced.

Besides the capitalist in land, two other types appeared: the manufacturer employing labour

on a large scale, and the merchant who sold his manufactured goods. The manufacturers established themselves in provincial centres, while the merchants had their offices in London.

Yorkist Pretenders

Until 1505 Henry was troubled with periodical insurrections on behalf of Yorkist pretenders, including that of Lambert Simnel, in 1487, and that of Perkin Warbeck, beginning in 1492. The king quelled these rebellions in characteristically vigorous but diplomatic fashion. During the seven years of the risings connected with Perkin Warbeck, Scotland was involved, as James IV had received the impostor cordially under his guise of a Yorkist prince, and allowed him to marry his kinswoman. After the execution of Warbeck, Henry made alliances with Scotland and Spain. His daughter, Margaret, was married to James IV; Arthur, his eldest son, to Catherine of Aragon. Arthur died, and after the death of Henry VII Catherine was married to Henry VIII, six years her junior.

Wolsey and the Renaissance

Henry VIII succeeded to a fairly ordered country. Ferdinand of Aragon, his father-in-law, and the emperor Maximilian tried to draw him into war with France. England had nothing to gain by this, but the king was young and the country quite ready to use its restored strength in a war of aggression. The work of army organization was assigned to the king's almoner, Thomas Wolsey (1471-1530). In 1512 a brief campaign was started in France, but was a failure. Wolsey, however, proved the wariest and most diplomatic of statesmen in negotiating a peace which was in accordance with the prevailing ideas of national greatness. He himself believed that England would be more powerful in peace than in war, and in this belief he reflected the constructive spirit of the Renaissance.

This intellectual movement, rather slow in reaching England, was based primarily on the desire to study the Greek language and classical culture. The most remarkable member of its protagonists in England was Sir Thomas More, the author of *Utopia*, who longed for the king to abandon militarism and cultivate the arts of peace. Wolsey, by 1515 chancellor of England and a cardinal, was a great



HENRY VII. His fine qualities of intellect and strength of character are shown in this contemporary bust attributed to the Italian Torrigiano.

Victoria & Albert Museum

supporter of the Renaissance. He is sometimes called England's first great foreign minister, and it was his constant desire to hold the balance of power between Francis I of France and the emperor Charles V, grandson and heir of both Maximilian and Ferdinand of Spain.

Fall of Wolsey

It is only since the publication of the state papers of the period that Wolsey has received just acknowledgement as a great statesman. He was unpopular, with commoners and nobles alike, on account of his ostentation and arrogance. His downfall was due not to his enemies, but to his diplomatic failure to persuade

Pope Clement VII to annul, as head of the Christian Church world and the Christian faith, the marriage, solemnised by a papal dispensation, between Henry and Catherine of Aragon, the widow of Henry's deceased elder brother Arthur. Henry's conscience became for various reasons—chief among them the lack of a male heir—uneasy about this marriage. It was certainly contrary to the law of the Church; had the earlier Pope valid authority to sanction it? When to Henry's doubts was added his desire to marry Anne Boleyn, he insisted that the marriage was no marriage; but public opinion required that the Pope should say so. Clement was too much afraid of the emperor Charles V, who was Catherine's nephew, to commit himself—Rome itself had been seized by an army of imperialist troops in 1527, and



GREAT FIGURES OF THE RENAISSANCE. Left, Sir Thomas More, author of "Utopia," patron of Holbein and friend of Erasmus: he was the greatest of English humanists. Right, Cardinal Wolsey, chief minister of Henry VIII, a man of outstanding abilities, arrogant and intensely ambitious. Hampton Court, which he built, survives as the most famous memorial of his princely splendour in England.

Wolsey failed to persuade him. Henry had no more use for the cardinal, who was presently charged with treason, and died at Leicester on the way to his trial in London (1530).

Wolsey's fall was the first step towards the Reformation. If the Pope would not give way,

papal authority in England might be repudiated altogether by a king on whom another pope had bestowed officially the title of Defender of the Faith on account of his vigorous denunciation of heresies recently propounded, and as vigorously, by Martin Luther.

LESSON 7

The Reformation in England

AFTER the fall of Wolsey, Henry, with the support of Parliament, embarked on his revolutionary course. There was one Church in all western Christendom, which acknowledged the Pope as its head, in England as elsewhere ; the only opposition as yet having any considerable popular support concerned the precise extent of the papal authority. The Church was international, taking no account of separate countries ; but if the Pope refused to do what was in Henry's eyes his obvious duty, his divine authority could be regarded as a fiction, and Henry, for England, would assume the authority himself. Being in his own view a pattern of orthodoxy, the king had no intention of countenancing heresy and adopting the new doctrines of reform ; but the dissolution of the monasteries and the consequent redistribution of the national wealth were in accordance with the spirit of the age, and a series of changes inaugurated by parliament during its sittings between the years 1529 and 1594 resulted in the annulment of papal authority in England.

In making these changes, which established the Reformation politically, Henry was able to feel and to show that he had the support of the nation behind him. Most of the clergy, unless

they happened to be at cross purposes with the king, resented papal interference, though most would certainly resent no less the interference of any lay authority with regard to Church property or in ecclesiastical affairs. Where they were in opposition they had to be coerced. Though the monks were easy, charitable, and therefore popular landlords in the more conservative north and west country, they were not so highly esteemed in the east and south. Laymen generally were envious of the wealth of the ecclesiastical foundations, the luxury in which many of the higher clergy were able to live, and their political influence—as in the case of the fallen Wolsey—and censured, or affected to censure, the reputed low standard of morality in the monasteries.

Breach with Rome

There was also an undercurrent—in spite of the general conservatism in matters of religion—of what was soon to be called Protestant opinion, derived from the condemned teaching of John Wyclif in the days of Richard II—when it was called Lollardy—and more or less unconsciously fostered by later scholarship. Since 1410 English had begun to displace Latin in hymns and devotional primers. At Oxford, in 1497-98, Colet had lectured in English on St. Paul's Epistles and taken his hearers back to the literal meaning of the words ; and Erasmus, the Dutch scholar who spent some time in England, and Sir Thomas More, author of *Utopia* and lord chancellor on Wolsey's fall, also did much to spread Renaissance learning and ideals. The courtiers and new nobility that had sprung up on the ruins of the old had no desire to cross the king's will, especially if he penalised clerical opposition to their own financial profit. The will of the nation as expressed by parliament was at Henry's back. And he had found in Cromwell, Wolsey's former secretary, a man who would fearlessly carry out his will.

During the first 20 years of Henry's reign parliament had been summoned



HENRY VIII (1491-1547). Succeeding his father in 1509, Henry VIII (shown in this painting by Holbein, with his daughter Mary and the royal jester) shook off the Pope's authority and obtained absolute power in Church and state

only when the king lacked money. The wealth amassed by Henry VII had nearly sufficed even for his son's extravagance, and appeals for money had rarely been necessary. Parliament being so seldom called, Wolsey had accustomed the country to government without it. Now it was to be in constant session, to endorse Henry's policy. The reserves were exhausted; the supplies to be asked for were to be drawn not from the pockets of laymen but from the spoliation of the Church. The long-established payments to Rome were to go instead to the royal treasury. An enormous fine was levied for a technical breach of the law, in which the king as well as the Church had shared. The clergy were no longer allowed to legislate, and all appeals to Rome were forbidden. The Pope, Clement VII, remained obdurate, and Convocation declared that the king was the head of the Church.

The Pilgrimage of Grace

A new archbishop was appointed, Thomas Cranmer. Presiding over an English ecclesiastical court, Cranmer pronounced the marriage with Catherine invalid from the beginning.



PROTESTANT MARTYRS. Among the most prominent of the Protestants who suffered under Mary I were Hugh Latimer (c. 1485-1555), bishop of Worcester, and Nicholas Ridley (c. 1500-55), bishop of London. This illustration in Foxe's "Book of Martyrs" shows their burning at Oxford.



THOMAS CROMWELL (c. 1485-1540). Born at Putney, the son of a blacksmith, he entered Wolsey's service, and thence passed into that of Henry VIII. For some years he was, in effect, first minister, but in 1540 he was accused of high treason and executed.

National Portrait Gallery

Thus, automatically, Catherine's daughter Mary became illegitimate, and the breach with Rome was complete; the Pope retorted a year later by officially pronouncing the marriage valid. Henry had already married Anne Boleyn. Cromwell, as "vicar general" of the head of the Church, carried out a visitation of the monasteries, the inmates of which continued to be the Pope's loyal supporters, their wealth being in many instances vast. The report of the visitors was held to warrant the dissolution of a great number of the smaller foundations. The north of England rose in the "Pilgrimage of Grace"; the insurgents were induced by fair words to disperse; then savage vengeance was taken, and a Council of the North was established—or re-established—to keep the people of those parts in order.

During the latter years of his reign Henry was more despotic than ever. Parliaments were seldom called. The spoliation of the Church included hospitals, colleges, and guilds. The larger monasteries met with the same fate as the lesser before them—the confiscation of their wealth, which enriched the Treasury, and of their estates, which were often sold. The purchasers formed a new landed gentry, who had no traditional connexion with their new estates and tenantry but had a fixed determination not to part with what they had gained. The great act of spoliation was accomplished. In this Henry was unscrupulously abetted by Cromwell, whose aim it was to erect an absolute monarchy and thereby secure his own high position and enrich not only his master but himself.

Downfall of Cromwell

In 1536 Henry had tired of Anne Boleyn, and on a series of monstrous charges he had her tried and beheaded. Probably her unpardonable crime was that her only child was a daughter and not a son—the daughter who was to become famous as Queen Elizabeth I, but who was now pronounced illegitimate. Catherine had

died in the same year and now Henry married a third wife, Jane Seymour, who died after giving birth to a son, the indisputable heir to the throne. Cromwell had procured from parliament a new Treasons Act, which virtually made the king absolute. He now wished Henry to consummate the battle with the Papacy by alliance with the German states which had adopted Protestantism ; to that end Cromwell suggested a fourth bride, Anne of Cleves, for his master.

Henry, pleased with a portrait painted of the German princess by Holbein, agreed, but on her arrival found her so unattractive that he discovered technical grounds for repudiating the marriage. Cromwell was denounced for treason. A bill of attainder was rapidly passed by both houses of parliament and assented to by the king. Cromwell was sent to the scaffold without being heard in his own defence—condemned under his own treason law (1540). During the remainder of Henry's reign there was no further advance towards Protestantism ; in fact, Catholics and Protestants were sent to their doom in impartial succession. In spite of his 15 years of plunder and his vast inherited wealth, Henry finished with the financial trick of a debased system of coinage—a means by which he could pay debts by issuing coins at a nominal value greater than that of the metal composing them. He was driven to this desperate expedient by the expenses incurred in wars with Scotland and France between 1544 and 1546.

Reformation under Edward VI

Henry had been expressly authorised to fix the succession by will ; after Edward he nominated Catherine of Aragon's daughter, Mary, and after her Anne Boleyn's daughter, Elizabeth. Edward had been brought up in a strictly Protestant atmosphere ; at the moment of Henry's death (1547) the Howards, lay leaders of the Catholic party, were in eclipse—owing to the disgrace of their kinswoman Catherine Howard—and the Reform party, headed by Somerset, the young king's uncle, were able to seize control. Somerset and Thomas Cranmer, archbishop of Canterbury—both idealists with little sense of the practical—pushed forward the Reformers' programme, and in 1549 a revised prayer-book was issued.

Somerset was ousted from power by his rival Northumberland, who joined the extreme Reformers. Edward had now come to regard all defection from Protestant orthodoxy as criminal. A second, much more Protestant, prayer-book was issued, accompanied by an Act of Uniformity, imposing its acceptance under severe penalties on both clergy and laity. England was to be further Protestantised. But

a religious system built up solely on the will to the king was hardly likely to survive him. Edward VI, a minor still, died in 1553. Under Henry's will the heir to the throne was Mary, a zealous Roman Catholic. In fear of the results of her accession, Northumberland had persuaded Edward to make another will leaving the crown to his cousin, Lady Jane Grey, a fervent and sincere Protestant, who was proclaimed queen.

But so hated was Northumberland that public opinion was solid on Mary's side, and the people would have nothing to do with a claimant advanced by him. The revolt was easily crushed, and Jane was sent to the Tower. Then another revolt was raised on behalf of Elizabeth, which was also crushed, and Jane and her young husband, Dudley, were sent to the block and Elizabeth to the Tower. No evidence of her complicity could be found, but she remained a suspected prisoner for the rest of the reign.

In 1554 Mary married Philip of Spain, who received the title of king, and the names of Philip and Mary appeared together on state documents and on the coins. Before a year had passed the queen was begging the Pope's pardon for the sin of breaking away from Rome, and craving reconciliation. The new parliament called after the marriage proved subservient to her wishes and re-enacted the old penal laws against heresy, but would not surrender the monastic lands.

Martyrdom by Fire

A persecution of Protestants then set in, in which some 300 persons—including Cranmer and several bishops, but no laymen of consequence—were sent to the stake. The effect was the precise opposite of what Mary had hoped and believed it would be. Persecution by fines, imprisonment, even by death not made conspicuous, might have served her purpose ; but the martyrdom by fire created a revulsion of sentiment in the hearts of the people. Though considerable numbers remained steadfast in the old faith, the fires of Smithfield made England a country that remained Protestant through all the wars of religion from which Europe was to suffer for a century to come.

Philip of Spain was, quite mistakenly, held responsible ; but he involved his wife in a French war, which resulted in the loss of Calais, 200 years after its first capture. A deep hatred of Spain was implanted in the English people. In 1558 Mary died, a defeated and sorrowful woman. Not only did Protestantism flourish, but she had no child or heir to carry on her zealous work for the Church of Rome. Elizabeth, for whom Protestantism was not a religious creed but a political necessity, became queen.

LESSON 8

England in the Elizabethan Age

THE reign of Elizabeth I (1558–1603) was for England an age of greatly advanced civilization for the wealthier classes and increased prosperity for all except the poorest. The period of transition between the feudalism of the Middle Ages and the Reformation had been one of disorder and consequent trade stagnation. The spread of vagrancy and pauperism had been hardly checked by the terrible laws of Henry VIII. The currency had been disorganized by the issues of debased coinage. Elizabeth and her Council sent out a proclamation in 1560 explaining the evils of this currency and their determination to call in the whole of it and issue a new coinage. This effected, the resultant sound currency ensured a revival of industry. Under the wise administration of William Cecil (who became Lord Burghley), leakage of state funds and waste disappeared. The importation of manufactured goods and the export of raw materials (except wool) were discouraged.

Industries were established by granting monopolies to those who engaged in them. Wages were to be fixed annually for each district for every trade, and employers could pay neither more nor less than the settled sums to labourers. Hours were about nine and a half a day in summer, eight and a half in winter. Companies authorised by the Crown took the place of the old guilds. Protestant refugees from Flanders and France, who were skilled craftsmen, were encouraged to settle in one or two trade centres and introduced their methods of manufacture of paper, silk, lace, and other commodities. So successful as teachers were these foreign workers that other towns received licences for settlers.

Gentlemen Adventurers

English commerce benefited from the decay of control over trade exercised by the German Hansa, or league of commercial cities, and from the growing adventurousness of English merchants and mariners, who were endeavouring to

extort for themselves a share in the Spanish monopoly of that New World across the Atlantic which Columbus had discovered for Spain in 1492. England, which since Henry's death had lost prestige in the eyes of Europe, was once more prosperous, well-ordered, wealthy, contented, and adventurous. Of the gentlemen adventurers of this age the two most famous are Sir Humphrey Gilbert and his half-brother Sir Walter Raleigh (c. 1552–1618). Gilbert is noted for his quest of the North-West Passage; he founded the first English colony in America. Raleigh was poet and historian, as well as explorer. Desire for extension of his sovereign's wealth led him in 1595 to seek El Dorado along the Orinoco. He could not persuade Elizabeth I to take his enterprise seriously, and was eventually forestalled by the Spaniards.

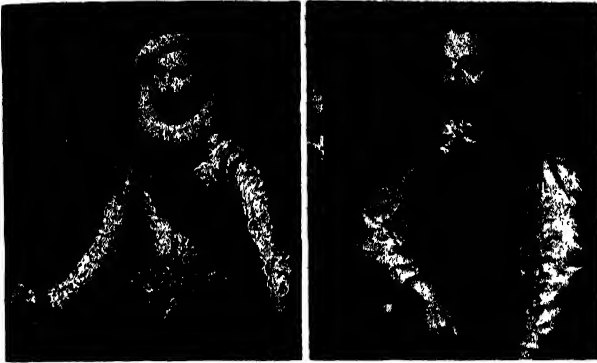
Personality of the Queen

Elizabeth came to the throne determined to rule over Church and state as had her father, Henry VIII. A new patriotism appeared, which was in itself a religion—an extraordinary personal loyalty to the queen. This loyalty had a glowing social quality, and was shared by Protestants and many Catholics, although the legitimate Catholic heir was Mary Queen of Scots, great-niece of Henry VIII and wife of the French dauphin. Since France was Spain's rival, Philip, now king of Spain, was forced to prefer Elizabeth I to Mary as queen of England. So far as foreign intervention was concerned, Elizabeth was secured for years to come by the rivalry between France and Spain. Reconciliation with the Papacy would involve acknowledgement of her own illegitimacy, and was out of the question. So Elizabeth then evolved a religious settlement which, though definitely Protestant, could be acquiesced in by all but the more rigid Catholics and most extreme Protestants, and which was expressed in a new prayer-book, a new Act of Uniformity, and the 39 Articles. Between them, these imposed a uniformity



ELIZABETH OF ENGLAND. Keenly intelligent, a wise ruler and a skilful diplomatist, she was exuberant in her enjoyment of life. Sir Christopher Hatton said of her: "The Queen did fish for men's souls, and had so sweet a bait that no one could escape her network."

National Portrait Gallery



ELIZABETHAN CAPTAINS. Left, Sir Walter Raleigh (c. 1552-1618), who played a considerable part in the early colonisation of North America, and in many respects was the incarnation of the spirit of the Elizabethan era. He was executed in 1618. Right, Sir Francis Drake, (c. 1545-96), who first circumnavigated the world (1577-80), and was one of the leaders of the English against the Spaniards in the wars of 1585-88.

of practice that was not to be transgressed, while permitting a very wide latitude of personal opinion, and so satisfying the great majority of her subjects.

Mary Stuart

Ten years after her accession Elizabeth I imprisoned the only possible figurehead for rebellion—Mary Stuart. Mary had not attempted to claim the English throne. The dauphin succeeded as Francis II, but almost immediately died, and Mary, who had passed the whole of her girlhood in France, returned to Scotland, a widow at 18. Her mother, Mary of Guise, had acted as regent of Scotland until 1559, a year before her death. There Protestantism in its most rigid and joyless form was already completely predominant; the government was in the hands of the nobles (called the Lords of the Congregation) and of the Calvinistic ministers of religion, headed respectively by Mary's half-brother Moray and by John Knox.

A Figure-head for Plots

Struggling for independence, she married her cousin Lord Darnley, a youth with no merits except his good looks. The marriage was a failure. Darnley joined some of the nobles in a conspiracy to murder the one man whom she trusted—her Italian secretary, Rizzio. A year later Darnley himself was murdered. The queen was carried off by Bothwell, the man whom everyone knew to be the murderer, and married him, thereby convincing the world of her own complicity. The nobles rose, drove Bothwell from the country, and

carried Mary a prisoner to Lochleven, where she was forced to abdicate in favour of her infant son James. She escaped from prison, but the few followers who rallied to her were defeated at Langside (1568), and she crossed the border to throw herself on the mercy of Elizabeth.

For 18 years Mary remained a captive in successive English prisons, a perpetual figurehead for plots against Elizabeth which were detected, watched till the moment arrived for exploding them, and then duly exploded. Mary's character was blackened in the eyes of the world by publication of the charges brought against her; she was denied opportunity of answering them and was never brought to trial. While she lived she was a constant danger but a useful hostage. When war with Spain could no longer be deferred, her life ceased to be useful, and Elizabeth consented to her death after a "trial." The problem of her guilt or innocence was left insoluble.

Relations with Spain

Throughout those years Elizabeth I, her ministers, and the nation were preparing for the conflict with Spain which the queen was resolved to postpone till the last possible



THE QUEEN'S RIGHT HAND. William Cecil, 1st Baron Burghley, Lord High Treasurer 1572-98, worked untiringly for his sovereign. He is seen in this contemporary painting by Marc Geerarts presiding in the Court of Wards, the mastership of which was one of his most important and remunerative posts, as it gave him much influence over the nobility and gentry.

moment, whereas Philip was waiting only to strike and crush at his own time—which would be when the Netherlands were completely subjugated. Elizabeth's calculated vacillations, her diplomatic juggleries, the trickeries with which she befogged friend and foes alike and repeatedly evaded war when further evasion seemed impossible, are a most interesting study but too intricate to be pursued here. Philip's agents were palpably mixed up with one after another of the plots in England; his subjects came to the help of rebels in Ireland, and English volunteers joined Philip's rebels in the Netherlands. In 1572 Francis Drake raided the Spanish Main, and again in 1578 when on his epoch-making voyage round the world. But still no declaration of war followed, until Philip's seizure of the English ships in the Spanish ports put an end to the peace that was no peace. Troops were sent officially to the Netherlands, and Mary was beheaded at Fotheringay, in Northamptonshire (1587). In the same year Francis Drake was let loose once again, and destroyed the fleet in Cadiz harbour, an exploit known as "singeing the king of Spain's beard," thus delaying the sailing of Philip's punitive expedition for a twelvemonth.

Defeat of the Armada

The Spanish fleet sailed in 1588, and passed up the Channel, where it was hammered and partly crippled by the English gunnery, but kept solid formation till it reached Calais Roads, from which it was driven out in a midnight panic by fireships. In the morning the ships lay scattered along the Gravelines coast at the



MARY QUEEN OF SCOTS, whose beauty, courage, and tragic life inspired poets and dramatists. This portrait, now at Hardwicke Hall, was painted in 1578, when she was a prisoner in Sheffield Castle.

mercy of the English, who were destroying it when a furious squall arose which stopped the fighting. When the squall cleared, the already shattered Armada was driving north past the east coast in wild flight, to be pursued by the English as long as ammunition lasted—that of the Spaniards was already exhausted. The winds, the waves, and the rock-bound coasts did the rest; only a crippled remnant succeeded in making a Spanish port. But the mariners had done their work first. The new English and Dutch tactics—learnt in the stormy waters of the north—of relying upon gunnery, seamanship, and the manoeuvring of sailing ships, had decisively triumphed over the old tactics of mass formation derived from the oar-driven war-galleys on the smoother waters of the Mediterranean. The Spanish domination of the seas was gone for ever, though more than another century passed before England won definite supremacy.

With the destruction of the Armada, Spain ceased to be a menace. Philip went on building armadas which came to nothing; the maritime war went on, the English preying upon Spanish and Portuguese commerce on the Atlantic and Indian Oceans, while the deliberate policy of the queen forbade the delivery of decisively crushing blows, because France must not be left without a continental rival. Apart from the war, and from the outburst of the literary glory of Shakespeare and his contemporaries, Elizabeth's last years were mainly spent in intrigues which, when she died in 1603, set the legitimate heir of the Tudors, the Scots king James VI, son of Mary Queen of Scots, upon the English throne.

LESSON 9

Two Kingdoms : One Crown

JAMES VI, king of Scots, succeeded Elizabeth I as James I of Great Britain by the will of parliament and also by hereditary right. No legitimate descendant of Henry VIII was living; James was great-grandson of Henry VII's elder daughter Margaret by her first marriage, and in her, as in all Henry VII's children, the claims of the rival houses of Lancaster and York were united. Like the Plantagenets, the

Scots royal family was descended from Alfred the Great. A political motive, not a legal title, was the only pretext for any plots against the Crown that occurred during his reign. His accession united under one Crown two kingdoms which had, and which continued to have, different laws, different officers, different administrative systems, and a tradition of hostility extending over 300 years. Both countries were

Protestant ; but the official episcopalian brand of Protestantism (Anglicanism) in England was not easily reconcilable with the Calvinist (Presbyterian) brand prevalent in Scotland.

New Ideas

Calvin had held that the state was subordinate to the Church ; in England, since the Reformation, the Church was subject to the state. But after the defeat of the Armada, the circumstances which had led to the Tudor dictatorship were disappearing. England at the end of Elizabeth's reign was a strong, united country. With Tudor wisdom she had used her powers discreetly and had met with personal approbation. In politics and religion, ideas of official government were gaining ground. The Divine Right of royalty, so fervently adhered to by James and his son Charles I., was already being displaced by the idea of a constitutional royalty dependent on the will of the people. One advantage in the union between the two kingdoms was that they could not be at war with each other unless one or other was in rebellion ; nor could they simultaneously pursue antagonistic foreign policies. Yet it was not 50 years since Scotland had broken off her alliance, maintained for two and a half centuries, with England's other most constant foe, France.

Relations of England and Scotland

During those centuries since Robert Bruce, Edward III had effected a temporary revival of the English suzerainty by setting Edward Balliol, son of John, on the throne by force of arms ; but Edward had been driven out when the project of the French war was developing in the English king's mind. In the year of Crécy the young Scots king, David Bruce, invaded England, was taken prisoner, and later released on promise of a ransom, which was never paid.

Early in the reign of Richard II, the king and his uncle John of Lancaster found in border raids an excuse for ravaging southern Scotland. Henry IV's quarrel with the Percys was concerned with the ransom of Scottish nobles taken in a fight on the border. Henry IV captured the Scottish crown prince in time of peace, on the high seas, a few weeks before his father's death, which made him James I of Scotland ; and the young king was held a prisoner—or, at best, a hostage—in England for 20 years, while Scots volunteers were fighting against the English in France. For the rest of the 15th century the fighting between

English and Scots was not on a large scale. Henry VII tried to set relations on a better footing by marrying his elder daughter Margaret to James IV ; yet ten years later, while Henry VIII was fighting the French in Flanders, James invaded England, and perished at Flodden with the pick of his army (1513).

Throughout his reign Henry made repeated attempts to capture James V, perhaps intending for him the fate which Mary Queen of Scots met with at the hands of Elizabeth I. James died of grief a few weeks after the battle of Solway Moss in 1542, in which his army was crushed by an English force. Then came the years of political and religious intrigue, of which his daughter Mary Queen of Scots was the storm centre. Edward I's dream of a united kingdom was indeed a necessity for the greater prosperity of both countries, as most of the abler statesmen in both had long recognized—if it could be effected without subordinating the interests of the smaller and poorer country to those of the larger and richer. Now the Scots were reconciled to the union of crowns ; a king of Scots was becoming king of England by hereditary right, so that Scotland should at least secure fair play in the partnership.

Strong Central Government

There was another side to the picture. England, in spite of recurring civil discords and dynastic conflicts, had been for centuries the best governed of European countries ; the rule of law and order had been more consistently prevalent there than elsewhere. Serfdom had virtually disappeared, life and limb and property

were more secure, justice was more even-handed. And England was unique in having enjoyed for a long time the possession of a parliament representative of the commons, whose assent—though it had no direct control over the administration—was necessary before any new law could be made, any old law abrogated, or any new tax levied—a parliament which did not govern, but whose goodwill no government could afford to dispense with for long.

Very different was the case with Scotland. Of the ten monarchs who had followed Robert Bruce, all but two had been minors on accession and only four lived beyond 40, except Queen Mary, who was deposed at 26.

Strong central government had been possible only at intervals ; a turbulent baronage had



JAMES I. Son of Mary Queen of Scots and Lord Darnley, James was a successful ruler of Scotland but, despite his intellectual gifts, a failure as an English king.

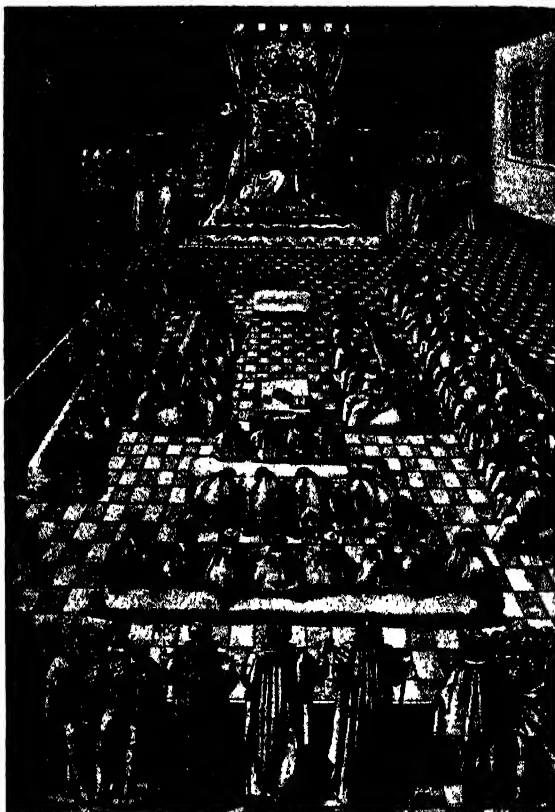
After Paul van Somer

never been long held under control, and what passed for a parliament was either dominated by the barons with the strongest armed following at the moment, or handed over its functions to a committee of the dominant faction. England was the most, and Scotland one of the least, law-abiding of countries. James had spent his life in winning by craft more control than any but two or three of his predecessors had ever exercised, and his conception of the rights and duties of kingship was based entirely on his experience as king of Scots, in which there was no counterpart to the new national spirit arising in England.

Theory of Divine Right

In his view the law should be enforced on and obeyed by the subjects, but the king was by right divine above the law; the rights of parliament were favours granted by the king's grace, and might be overridden at the king's will—though a wholesome terror of armed rebellion set him a limit in putting his theory into practice. Hence it was inevitable that there would sooner or later be collisions between the new Scots king and the English parliament, which even under Elizabeth had been restive whenever it scented royal encroachments on its own rights.

The strength of parliament lay in its power to refuse supplies—in other words, to make the voting of supplies conditional on the remedying of grievances. With a government which it trusted and a policy which appealed to it, supplies were always forthcoming. With James on the throne, it neither understood nor trusted his policy. The country was always ready for war with Spain, and its dread of Roman Catholicism was raised to fever heat by the desperate Gunpowder Plot of a few fanatics for



THE HIGH COURT OF PARLIAMENT IN THE REIGN OF JAMES I. This engraving from R. Glover's "Nobilitas Politica et Civilis," 1608, shows James I enthroned in the House of Lords. Earls, barons, and bishops are grouped round the chancellor's seat, and the masters of chancery and the clerks are ranged in rows of four immediately facing the king. In the foreground the commons are seen separated from the lords by a barrier, and the central figure is the Speaker.

British Museum



THE GUNPOWDER PLOT. One of the best-remembered incidents in English history is the plot for the blowing up of parliament on November 5, 1605. This engraving by Crispin Van der Passe shows the conspirators in conference

blowing up king, ministers, and parliament, in the third year of the reign. James wanted alliance with Spain at almost any price, without realizing that Spain's price was, in effect, the restoration of the Roman Church in England—not merely toleration, which he himself desired, but which the narrow Puritanism of a large number of his subjects abominated. If he called parliament to vote supplies, it aired its grievances and criticised policy instead. In constant need of money, the king fell back upon methods of raising it which were denounced in parliament as illegal but were declared by the judges to be within the royal prerogative.

The tension between Crown and parliament was increased by the arrogance, incompetence, and profligacy of the favourite George Villiers, whom James had made Duke of Buckingham and intimate companion of the heir to the throne. James had always evaded an irreparable rupture, not without some humiliation. He died in 1625, leaving Charles I the still unsolved problem—and Buckingham.

Such honours as belong to the reign of James I and VI were legacies of the last reign ; half the literature usually called Elizabethan was actually produced after his accession, and Elizabeth's mariners were pioneers of the maritime and over-sea empire which had its actual beginning under James. The East India Company, incorporated in 1600, leased its first trading

station at Surat in 1609. Sir Walter Raleigh had striven in vain to create the nucleus of a Greater England beyond the Atlantic ; in 1607—while he was a prisoner in the Tower, where he was kept until 1616—a settlement was made by the Virginia Company which survived all vicissitudes, and in 1620 the Pilgrim Fathers planted the first Puritan colony—also with the assent of James—farther north at New Plymouth. Out of Surat grew the British Dominion in India, and out of those two colonies sprang the British colonial empire and the United States of America. When Elizabeth I died, England possessed not one yard of soil outside the British Isles ; in the days of her successor, the first hereditary king of England, Scotland, and Ireland, the British Empire was born.

LESSON 10

The Duel of King and Parliament

WHEN James died (1625) Europe was already in the throes of the Thirty Years War, primarily a German civil war within the Empire, but one in which every European state was sooner or later involved. England and France were at this time both on the brink of intervention, and the disastrous failure of an English expedition, in support of the Elector Palatine, for which the blame was laid on Buckingham, was the last important event of the reign of James.

The King's "Rights" Denied

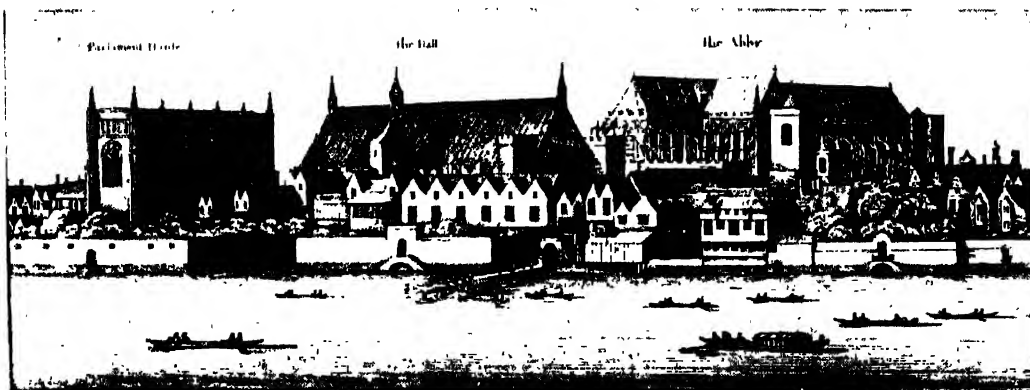
England had just broken with Spain, and Charles I was just about to marry the French king's sister, Henrietta Maria. Buckingham was at the height of his unpopularity with the people and of his favour with the king, who was badly in want of money for the war, while the country was in no mind to provide money merely that it might be mis-spent by Buckingham. So when the inevitable parliament was called, it voted, for one year and no more, a tax upon imports called "tonnage and poundage," which had for two centuries been granted to successive kings for life, though it was not one of the "ancient customs" to which all kings were entitled by statute. In Charles's eyes, this limitation was a breach of royal rights, established by unbroken custom. When parliament followed this up by, in effect, demanding the dismissal of Buckingham, and went on to denounce the favour shown by Charles to members of the High Church party, whom they regarded as little better than papists, Charles dissolved the parliament, though it had voted only a fraction of the supplies he had demanded.

James I had made free use of non-statutory methods for raising money. In the case of

impositions or increased customs duties, he had the sanction of common law. Monopolies, benevolences, distraint of knighthood, commissions of array, all of which had been employed in moderation by the Tudors, were made the instruments of tyranny by James and Charles. Neither king denied to parliament the power of making statutes or of granting supplies, but they did deny it the exclusive right ; they nullified the power that it had by levying impositions and loans and by issuing proclamations. In Charles's opinion it was the duty of the house of commons to grant a yearly subsidy, and refusal to do so was obstructive, unconstitutional, and rebellious. Unfortunately he believed also that he could outwit parliament by appearing to yield, afterwards returning to the exercise of arbitrary power ; it is probable that he sincerely held himself unfettered by promises obtained under compulsion, which bound him to actions not in accordance with the office of king as he understood it.

The Petition of Right

A new parliament was called, attacked Buckingham as a preliminary to discussing supplies, and was dissolved. Nearly two years passed before a third was summoned, in 1628. Meanwhile Charles, with the support of the judges, had been collecting tonnage and poundage as if a parliamentary grant were unnecessary for all direct taxation. He had tried to levy a compulsory or forced loan, dismissed his chief justice for denouncing it as illegal, and imprisoned recalcitrants who refused to pay, without bringing any specific charge, by royal prerogative. Buckingham had intervened against the French government on behalf of the Huguenots at La Rochelle, had personally



PARLIAMENT HOUSE IN THE TIME OF CHARLES I. This engraving, by W. Hollar, shows the old house of parliament as it appeared to the artist in 1641. Originally a chapel founded by Stephen, the building became a meeting place of the house of commons under Edward IV, until whose reign its sessions had been held in the chapter house of Westminster Abbey (right). The commons held their meetings in St. Stephen's chapel until 1834, when it was destroyed by fire.

British Museum

led an expedition thither with disastrous results, and was eager to avenge his defeat.

The third parliament was seething with anger when it met, and it proceeded to pass in both houses the Petition of Right (1628), which required the king to govern according to law—quite incompatible with the Stuart idea of Divine Right—and forbade the levying of any taxes or loans without consent of parliament. The petition was the first important statutory restriction of the powers of the Crown since 1485. Charles, putting on it an interpretation which was not the parliament's, yielded assent after some resistance. Parliament returned to the attack on Buckingham and the High Church appointments, and was forthwith prorogued (not yet dissolved). After this the constitutional debate took on more and more the aspect of a religious controversy.

Hampden and "Ship Money"

Thomas Wentworth, hitherto a leader of the commons, deserted his old colleagues and joined the king; he was a far more able upholder of royal claims than Buckingham, who was assassinated by a disgruntled ex-army officer a few days later. The same parliament met again in January (1629), fell at once to denouncing the continued taxation and the king's ecclesiastical policy, and was dissolved. For the next 11 years Charles ruled without summoning a parliament at all. As by proclamation he was able to make new laws and alter old ones, and as he continued to collect tonnage and poundage together with imposts, and enacted the customs dues and other sources of revenue in spite of the Petition of Right, it seemed as though he could be independent of

parliament, the very name of which he hated.

While the ingenuity of lawyers revived long-obsolete but technically legal methods of scraping together some revenue by prerogative, the most famous of these measures, called "ship money," was at best, in the form adopted, of doubtful legality. In 1634, though England had withdrawn from the Thirty Years War, the seaports and maritime counties were required to furnish ships for defence of the commerce of the country against the Dutch and French navies; shortly afterwards the king demanded from the inland counties money to compound for further equipment of the fleet. The demand was in defiance of the Petition of Right and struck at the very existence of parliament. The king was unwilling to meet his commons in case his cherished ecclesiastical policy was threatened, and he submitted the legality of his case to the judges, who laid it down that the king, under the Great Seal of England, can compel his subjects, when the country is in danger, to supply means for defence—the king to be sole judge of that danger. In 1635 John Hampden, a wealthy squire of Buckinghamshire, refused to pay, and the dispute was adjudicated by the 12 judges of the Exchequer. Seven decided for the king, five were for Hampden; only two declared the tax illegal. So vital was this case to the position of parliament that the "Long Parliament" later passed an act declaring the judgment void, to which the king gave assent in 1641. It declared the ship-money writs to be illegal and condemned the king's practice of obtaining an outside legal opinion. Statute law henceforth was not to be the servant of common law.

During the 11 years between the meetings of

parliament, popular resistance to the government measures continued to be suppressed by the three arbitrary courts which were indeed legal, having been constituted by Act of Parliament under the Tudors—the Courts of Star Chamber, High Commission, and the Council of the North—but had the power of imposing arbitrary penalties.

The second, an ecclesiastical court, was presided over by Archbishop Laud, and the third by Wentworth, who was, in effect, viceroy in the northern counties until he was transferred to Ireland, where he ruled with an iron hand, but with unprecedented success.

Scottish National Government

During those years Charles was unconsciously sowing the wind in England, but it was in Scotland that he began to reap the whirlwind. He wished to impose upon the servently Presbyterian Scots the prelatial English Church system, which to most of them was but disguised papistry. Without legal machinery or authority, a National Covenant was drawn up and signed by high and low, pledging the signatories to loyalty to the Crown and resistance to all religious innovations not sanctioned by the General Assembly of the Kirk and by the Scots parliament—the English parliament having no authority north of the border. When the General Assembly was elected, it virtually assumed the sovereign authority, with popular assent. The king had no forces in Scotland with which to compel obedience. He threatened to do so with troops levied in England. The Scots organized an army of their own and marched to the border (1639). A very unreal attempt at a compromise broke down.

Wentworth, summoned from Ireland and quite ill-informed as to public feeling in England, advised the calling of parliament and what he took to be the consequent easy suppression of the Scots. In April 1640 the "Short Parliament" met, only to be dissolved (against the advice of Wentworth, now earl of Strafford) after three weeks. The Scots marched into England, not, as they said, to make war but to claim their national rights. The king, finding himself helpless, promised to accede to their demands; and at the same time he summoned a new parliament, by the advice of Strafford's jealous enemies, the court party, who knew, as Strafford knew himself, that his destruction, as the one strong man on whom Charles could lean, would be its first aim.

In November 1640 the "Long Parliament" met, and proceeded forthwith to the impeachment and arrest of Strafford. Soon it was clear that the charge of treason must break down; for the legal process of impeachment a bill of attainder was substituted, passed by both houses, and presented to the king. There was no law under which Strafford could be condemned to death, but an Act of the king in parliament would make one for the occasion. Charles did not dare to refuse; he signed the Act, sacrificed his champion to the popular hatred and the jealousy of his rivals, and thereby sealed his own doom. Strafford was beheaded in May 1641.

Insurrection in Ireland

From the moment of Strafford's arrest Charles had been powerless—at first, in the face of a virtually unanimous parliament. Bill after bill was passed by both houses to which he was forced to give the royal assent—forbidding the extended prorogation of parliament or its dissolution without its own consent; abolishing the arbitrary courts which had been the instruments of oppression; abolishing all the methods, whether technically legal or not, by which Charles had raised money without consent of parliament. But a rift in the religious question, which grew and grew, revealed itself when the Puritans in the commons introduced and passed a bill for the total abolition of episcopacy, which never reached the lords. To resist religious oppression was one thing, to attack the Church of England itself was another. The moderates, repelled by Puritan fanaticism, began to range themselves on the king's side. Then there arose an anti-Protestant insurrection in Ireland, which wild rumours attributed to the king's machinations. An armed force was needed in Ireland; but if it were under the king's control, would he not use it for the overthrow of English liberties? The commons prepared a militia bill which would give the control not to the king but to themselves; and then they passed, against fierce opposition and by a majority of no more than 11 votes, a long resolution called the Grand Remonstrance (November 1641), which was a detailed indictment of the king's government—including his foreign policy—from the beginning. The moderates had now been converted into steadfast royalists by the action of the extremists.

Charles saw his opportunity but misjudged the strength of



JOHN HAMPDEN, cousin of Oliver Cromwell and great Parliamentary leader. He was the first to refuse payment of ship money in 1635. This portrait is by Robert Walker, painter of Puritans.

National Portrait Gallery

his supporters. Elated by the reaction, he attempted a *coup d'état*, going down to the house with a body of troops to arrest five leaders of the opposition. They had warning, and were not there. The blow had failed, but

the action set a spark to the flame of rebellion (Jan. 1642). A week later Charles was on his way to the north to instigate futile negotiations, and by the end of August the country was in the throes of the Civil War.

LESSON 11

The Civil War and the Protectorate

THE Declaration of the Lords and Commons, dated June 6, 1642, in defence of the order of parliament of three months earlier for mustering the militia, was the first practical usurpation of sovereignty by the English parliament. The king had become a fiction, and the constitutional issue was decided by the arbitrament of war.

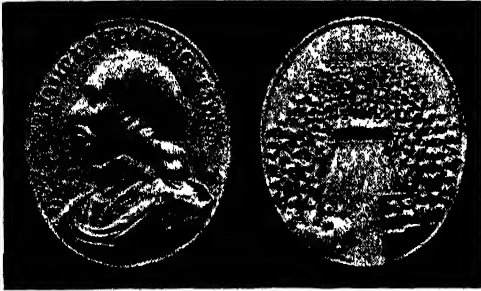
On August 22, 1642, Charles set up his standard at Nottingham, hoping to end the war speedily. The gentry could collect such of their tenants as they could arm and drill, and it was on these that the Royalists were mainly dependent, the militia machinery being for the most part in the hands of Parliamentarians, as also was that for the collection of taxes and for the fleet. The bulk of the gentry were Royalists (Cavaliers); the bulk of the townsmen Parliamentarians (Roundheads). The strength of the Roundheads was in London, the eastern counties, and the ports; that of the Cavaliers in the north and west. The division was made by the antagonism of two loyalties which ought never to have been in conflict—loyalty to Church and king, or to civil and religious liberties.

For the first year the balance of military successes was with the Royalists. Then parliament allied itself with the Scots, who had hitherto held aloof, in the Solemn League and Covenant, on a religious basis; and Colonel Oliver Cromwell raised, organized, and trained by his own methods, in the eastern counties, the troops who were presently to be known as the Ironsides. They were prominent in the mixed English and Scottish army commanded by Sir Thomas Fairfax which routed the Royalists under the king's nephew, Prince Rupert, in the north at Marston Moor (July 1644). The tide turned. Montrose raised the Highland clans for the king, and seemed likely to carry the Royalist cause to victory in Scotland; but Cromwell in England organized the New Model Army, and in June 1645, Fairfax won the decisive victory at Naseby. The king's army dissolved into a number of scattered detachments; Montrose was overwhelmed at Philiphaugh; the Royalists could not make head anywhere. In the May following, Charles placed himself in the hands of the Scots army in the north of England, and then began a long series of negotiations.



SACKED BY CROMWELL. Drogheda was stormed by Cromwell during his ruthless Irish campaign. Sack and slaughter were the recognized penalties for obstinate resistance, and Cromwell claimed that his drastic methods would "tend to prevent the effusion of blood for the future." Above is a view of Drogheda, drawn about 1680. The fortifications were extant until the beginning of the 19th century.

British Museum



IN COMMEMORATION OF DUNBAR. Designed to commemorate the victory of Cromwell and his Ironsides at Dunbar in 1650, this medal was the work of the famous medallist, Thomas Simon. Cromwell is shown on one side, the house of commons on the reverse.

British Museum

The king's object was to induce one or other of the groups among his enemies to accept his own terms, which proved unacceptable to any of them. The Scots, discontented at his refusal to support Presbyterianism, accepted payment for their recent military services in alliance with parliament, and deserted the king, leaving him in the hands of the parliamentary commissioners. The "Puritan" army wanted freedom for a host of sects, mistrusted parliament, kidnapped Charles, and kept him virtually in their own custody at Hampton Court. The negotiations went on, until he attempted flight to France, was caught, and imprisoned at Carisbrooke. In 1648 there were Royalist insurrections; in August a Scots army invaded England for the king, and was shattered by Cromwell at Preston; the effect was to convince the army that peace was impossible while the king was alive. While Cromwell was away, the army in London under Colonel Pride "purged" the parliament by forcibly excluding from it all the members who took the side of the king; and the remnant—the "Rump"—assumed absolute authority.

Charles Beheaded

For the subsequent proceedings there was no legal warrant. The Rump appointed a court to try "the nan Charles Stewart" for treason. Charles refused to plead before a court which had no legal jurisdiction. He has the credit of standing up for the law, which he had formerly used in an attempt to gain absolutism. His assailants accused him on merely criminal grounds. The court pronounced the death-sentence, half its

members refusing signature, and the king of England and Scotland was publicly beheaded at Whitehall, manifestly by the fiat of the irresistible Puritan army, whose leader—in fact, but not officially—was Oliver Cromwell (Jan. 30, 1649).

Cromwell in Ireland

The Rump proclaimed a republic under the name of the Commonwealth, and the abolition of the monarchy and the house of lords, and ruled as the sole sovereign authority. Such an arrangement could not have been enforced but for the support of the army. For nearly three years Cromwell himself, who was only a general and, at first, not even general-in-chief, was rarely present in London, being away on campaign most of the time. Most of Ireland was in arms for the restoration of the monarchy. Cromwell was sent to establish the new government, which he did by force, acting on the strictest Puritan principles. The Royalists were pronounced rebels, the Roman Catholic priests combatants, and himself, as the instrument of the "righteous judgment of God," elected to inflict slaughter "to prevent the effusion of blood for the future." After Cromwell's departure in 1650 his work was carried on with equal ruthlessness by Ireton and Ludlow; colonies of Puritan soldiers were planted in Ulster, and the property of Catholic landowners confiscated in all parts of Ireland, with the exception of the wilds of Connaught, where the native Irish bred in their hordes of underfed,



"BE GONE, YOU ROGUES!" Cromwell became virtual dictator after the coup d'état of 1653, when he summarily dissolved the Long Parliament which was, he declared, polluted by self-interest. In this satirical Dutch print of the time an inscription on the wall states that "This House is to Let." In the foreground the Protector points the way out to retiring members, and in the background Lenthall, the Speaker, is being forcibly removed from the chair.

British Museum

half-clothed children, that bitter hatred of England which later in Ireland and elsewhere was to produce one of the most difficult problems for the British Empire.

In 1650 the Scots government, indignant because their king had been beheaded by the English, recalled Charles II, the exiled heir, to the throne on their own terms. This act the English government had no sort of right to forbid, but could not afford to permit. Cromwell was no sooner back from Ireland when he was dispatched—now as “lord general”—to bring the Scots to reason. He snatched a remarkable victory out of the jaws of defeat at Dunbar (September 3, 1650); but when, in the following campaign, he left the way to England open, Charles II with the Scots army marched south, to be trapped at Worcester. The Royalists were crushed by Cromwell on the first anniversary of Dunbar; Charles, after hairbreadth escapes, made his way to France. Scotland could no longer offer effective resistance, and was next year incorporated with the Commonwealth, but with General Monk as military governor.

Maritime War with the Dutch

Meanwhile the Rump was becoming increasingly unpopular. Royalists, to keep their estates, were forced to pay down a sum of money. This would have been fair enough from the parliamentary point of view had the system been fairly carried out. But members of parliament were bribed to let certain persons off easily, and used their power to promote personal interests. Parliament's great work was the reorganization of the navy, which had been neglected ever since Elizabeth's death, and was at this time surpassed by that of Holland. England sought alliance with Holland both as a republic and as a leading Protestant power, but her overtures were rejected, and trade rivalry brought on a maritime war with the Dutch (1652-54), from which England emerged definitely the equal if not the superior of Holland. Dutch merchant shipping suffered as it had to run the gauntlet of the Dover Straits on its way to and from home ports.

The Lord Protector

After Worcester, Cromwell was indisputably the most powerful man in the country. The Rump wanted to remain in permanent control, and to disband the army of which he was the trusted commander; while the parliament



CROMWELL IN DEATH. This death mask of the great Protector, first exhibited in 1928, has been handed down from the family of Cromwell's granddaughter.

Courtesy of Messrs Spink & Son

was at work on a bill to prolong its own existence, he went down to the house with a body of troopers and dissolved it by his own authority—backed by the army (April 1653). Although parliament had done well in some things, Cromwell declared that they were polluted by self-interest and that it was not fit for them to “sit here any longer.”

From that time Cromwell ruled as a military dictator, a Caesar maintained by the power of an irresistible Puritan army, which in December made him Lord Protector with almost absolute powers, and with a single-chamber parliament pledged to maintain the new constitution. That experiment failed. Cromwell then governed by dividing the country into districts ruled by major-generals. In 1657 a new parliament was called. It made him Protector for life, after offering him the crown, which he reluctantly refused. But

when it met again, it fell to discussing the constitution instead of attending to pressing business. No other was called before his death on September 3, 1658; and then followed a chaos for which General Monk found the only possible solution—the recall of Charles II in May 1660, and his establishment on the throne.

As an experiment or, rather, series of experiments in constitution building, the Commonwealth had proved a complete failure, while it had implanted in the English mind a permanent loathing for anything like a military dictatorship, and for any kind of government which interferes on moral or religious grounds, with the private lives of its citizens. The domination of Puritanism was followed by the inevitable reaction. But for the time a very strong dictatorship was the only possible alternative to anarchy, and Cromwell was the only man capable of shouldering the burden, which wore him out. Inevitably his rule was arbitrary, harsh, exasperating; but it gave probably more security and less injustice than the country would have had to endure without him. His foreign policy was in one respect unfortunate, because, by allying England with France as pledged by Mazarin to the principle of toleration, he helped to give France a dangerous predominance in Europe, which paved the way for the aggression of Louis XIV during the next fifty years; but it also enabled England ultimately to be the insuperable obstacle in the path of that aggression, and restored the prestige lost almost from the moment of James I's accession.

LESSON 12

English Politics in the Reign of Charles II

THE recall of Charles II in 1660 was hailed with joy by three-quarters of the country and accepted as the best available course by nearly all the rest. After enthusiastic greetings at Dover, on his 30th birthday he entered London, amid joyous, shouting crowds. His return did not represent the triumph of any political principle; but it meant that the country was sick of military dictatorship and of that official interference with private lives and occupations which Puritans regarded as a proper function of government.

In effect, the terms of the agreement made between what may be called Monk's parliament and the exile-king were that the legislation passed by "the king in parliament" in the last reign was to be the recognized law of the land, all later legislation being invalid; that there was to be no vindictive action taken against those who had opposed the late king, even in arms, excepting the actual regicides; that the question of taxation was to be no longer disputable—the Crown was to receive a fixed annual revenue without power to add to it, anything additional being procurable only by act of parliament. The settlement by agreement of the religious problem was to be postponed until a regular parliament could be summoned, with a king on the throne. Scotland was again to be a separate kingdom. The restoration was really more a restoration of parliament than of king.

The Act of Uniformity

Those were the terms which Charles—a man of far greater intellectual ability and sense of humour than his father—accepted with a light heart. The settlement was duly made on those lines. When parliament was summoned, it proved to be Royalist and fervently Anglican in religious sentiment, but as tenacious of its own rights and privileges as any of its predecessors, and as hostile to Rome as to Puritanism, though the king did not fully realize this till half-way through his 25 years' reign. On the religious question parliament took its own way, which was not the king's. While the old penal laws against papists remained in force, it passed a series of laws, including the Act of Uniformity (1662), penalising Protestant nonconformity—or dissent, as it now began to be called. By this act every clergyman and schoolmaster who was not in accord with everything contained in the Prayer Book was to be precluded from holding benefice. About 2,000 clergy resigned,

and nonconformists now abandoned the idea of Church unity and petitioned for toleration.

Charles himself, as the result of his long exile in Catholic France and the influence of his favourite sister "Minette," Duchess of Orleans, was inclined to favour if not the restoration, at least the official toleration of Romanism; and to make the proposal more palatable to the people he would have coupled with it the toleration of most forms of Protestant dissent; but he did not choose to gain his ends by fighting. He assented to repressive legislation; but later tried a risky experiment: by royal prerogative he "suspended" the penalties for nonconformity.

Parliament not only forced him to withdraw this "Declaration of Indulgence," denouncing it as illegal, but also passed the Test Act (which continued in force for more than a century and a half), excluding from all public offices any person who could not pass the test of membership of the Church of England (1673). The act inflicted no penalty on the holder of a special belief, but led, in particular, to the driving out of office of every Roman Catholic.

For the next eight years Charles was fighting a duel of wits with Anthony Ashley Cooper, Earl of Shaftesbury (1621-83), the cleverest politician in England except the king himself. A born party leader, whose sense of justice was acknowledged by even his worst enemies, Shaftesbury was loyal to two principles only, his love of parliamentary government and his desire for toleration based on hatred of clerical interference.

The Treaty of Dover

For some time Shaftesbury had imagined that he was in the king's confidence, together with the other members of the so-called ministry of Cabal (a word formed from the first letters of the names Clifford, Arlington, Buckingham, Ashley Cooper, later Earl of Shaftesbury, and Lauderdale.) In 1673 he discovered the contents of the secret articles of the Treaty of Dover, signed in 1670 between Charles and Louis XIV, by which, apparently in return for his assistance against the Dutch and the restoration of Catholicism in England, Charles was to become the pensioner of Louis, who undertook to supply troops to enforce Catholic domination and the revival of the royal prerogative to the English Crown.

Modern research has cast doubts upon the importance of this secret treaty. Charles received



RESTORATION OF CHARLES II. This animated print corroborates Samuel Pepys's account of the enthusiastic scenes at Dover when, on May 26, 1660, King Charles II set foot on English soil after his long exile. "Infinite the crowd of people, and the horsemen, citizens, and noblemen of all sorts . . . He talked awhile with General Monk and others, and so into a stately coach there set for him, and so away through the town towards Canterbury . . . The shouting and joy expressed by all is past imagination."

British Museum

money only occasionally from Louis; and then only small sums. In return he gave no armed assistance, except for the short period of the Dutch wars which were largely due to the rivalry of the merchants of the two countries, who were by no means royalist. Possibly Louis was the loser by the bargain; he might have attacked England before the new régime was sufficiently established.

Popish Plot

It is doubtful whether Charles did more than toy with the idea of restoring the Catholic faith; when he realized the popular fury after the exposure of the secret treaty, he abandoned the idea in favour of a comfortable absolutism which would enable him to finish his days in peace with his ladies, his spaniels, and the ducks he had put in Kensington pond.

Having apparently decided that in Charles's intention toleration for the Catholics was bound up with a scheme for the overthrow of English inde-

pendence, Shaftesbury remained faithful to his principle of toleration only for dissenters, and, supporting the Test Act, incurred Charles's anger. Shaftesbury was dismissed from the ministry and set himself to form a parliamentary

opposition, which developed into the Whig party, the Court party being called Tories.

Henceforward it became Shaftesbury's primary object to procure the exclusion from the succession to the throne of the heir presumptive, the king's brother James, for in James's creed not only was Divine Right the first article, but as a zealous Roman Catholic he was firmly determined to catholicise the government. A few years later (1678) the country went crazy over a monstrous fabrication, the "discovery" by the notorious liar Titus Oates (1649-1705) of a (wholly fictitious) Popish Plot. The king himself did not dare to stand up against the unreasoning panic; nor did the judges. According to Oates's announcement the



CHARLES II. The king was a consummate politician, and for some years before his death enjoyed autocratic power. His sardonic features are cleverly portrayed in this bust by Honoré Pelle, dated 1689.

Victoria & Albert Museum

king was to be murdered, James set on the throne, and Protestantism was to be ruthlessly suppressed.

In his duel with Shaftesbury, Charles had a weapon in reserve. Louis XIV, who feared lest parliament should, by keeping Charles short of money, eventually drive him into alliance against France, in 1678 provided him with a pension, sufficient to make him independent for a while of supplies from Parliament. Until that pension had been secured, Charles could only stand on the defensive with Shaftesbury. The religious panic wore itself out. Parliaments had met, fought, and failed to pass the Exclusion Bill (1679) which would have excluded James from the throne, and they were either prorogued or dissolved.

Charles as Autocrat

A new parliament met early in 1681. Shaftesbury and the Whigs gathered to it confident of winning a crushing victory; but it had met only to be immediately dissolved, and no other parliament was called in the remaining four years of the reign. Charles was independent, having secured his pension and the succession for his brother. Armed rebellion was not even in sight. Alarm at the idea of a Catholic successor to the throne was nothing to the alarm at the possibility of a second civil war. Charles's personal popularity increased with the violence of his Whig opponents. During the next two years he acquired, by an ingenious but strictly legal remodelling of the corporations, the Crown's control over the borough elections to the house of commons; so that James, when he duly became king at Charles's death in 1685, was able at once to summon an enthusiastically Tory parliament.

Under a Mask of Frivolity

Charles never defied parliament as his father had done; he did not ignore the lesson of his ill-fated Declaration of Indulgence—while the Exclusion Bill never passed the lords. He got his own way by relying not on force but on intellectual dexterity veiled under a mask of

frivolity. Towards the end of his reign he had succeeded in making himself completely independent. Apart from the French king's pension, he had rallied round the throne those who were anxious at all costs to maintain order and avoid civil war. But parliament had defeated toleration; it had definitely acquired the right of "appropriation of supply," that is, of voting supplies for specific purposes, with the right of controlling the expenditure; it had established the principle of ministerial responsibility, so that a minister could not escape punishment even by proving that he had acted under the king's orders; and its Habeas Corpus Act put on a firm foundation the right of every accused person to be tried without any undue delay.

London Life

Charles's extravagance in Court expenditure increased trade and prosperity in certain directions, though his finances during the earlier part of his reign were often in hopeless confusion. The growth of London after the fire in 1666 was a sign of renewed prosperity. The Court and meetings of parliaments meant that many rich families had new town houses, and there was much building round the districts called now Lincoln's Inn and Soho Square. While painting was in the hands of foreign artists, English architecture flourished. The disaster of the great fire gave Sir Christopher Wren (1632-1723) his opportunity. Though many of his plans for a vast scheme of rebuilding for London were rejected, he was chosen as architect for the new St. Paul's, and, in addition, designed other London churches and buildings throughout the country.

The coffee-house and the theatre were important features of the day. The former owed its existence to the introduction of chocolate and coffee as beverages. The theatre had an added interest by the introduction, about 1659, of actresses for the women's parts, hitherto played by boys. Pepys's Diary is the most authentic account of London life in the first nine years of Charles's reign.

LESSON 13

The "Glorious Revolution" of 1688

WHEN James II came to the throne in 1685 the country was well disposed towards him and somewhat ashamed of its Popish Plot panic; Charles had ensured him a Tory house of commons. With tact and a moderate policy he might have recovered practical toleration for his co-religionists, short of actual repeal of the Test Act. In theory, though not in fact, the doctrine of divine right

was triumphant after the Restoration—so triumphant as to deceive James and tempt him to ruin; the characteristic political philosophy of the period was that expounded in Sir Robert Filmer's *Patriarcha* (1680), wherein is traced the divine right of kings from the power granted to Adam by God. James, more conscientious but less astute than Charles, flung away his chances by reverting to arbitrary methods, and



LANDING OF WILLIAM OF ORANGE. Invited by a group of influential personages to "bring over an army and secure the infringed liberties of England," William landed with his troops at Brixham in Torbay, on November 5, 1688. The scene of the landing is depicted in this painting, by an unknown artist, now in Hampton Court Palace.

By permission of the Lord Chamberlain

alienating the Crown's strongest supporters, the High Anglicans, clerical and lay.

When under Shaftesbury's leadership the Whigs were working for the Exclusion Bill, they fixed upon Monmouth, an illegitimate son of Charles II, as the Protestant candidate for the succession. Shaftesbury had died in exile in Holland in 1683. Monmouth crossed the North Sea in an attempt to make good his claim to the throne as the champion of the Protestant interest. His revolt was easily crushed at the battle of Sedgemoor (1685). Large numbers of the rebels were executed without trial, and Jeffreys, the cruellest of judges, was sent to hold the "Bloody Assize" in the western counties, hanging 320 persons and transporting more than twice as many to be slaves in the West Indies. As a reward for his efficiency he was made lord chancellor on his return to London. Another revolt, headed by the Duke of Argyll in Scotland, was still more easily put down, and its leaders executed.

Opposition

Monmouth's execution united all parties in recognizing as heir to the throne

the king's Protestant daughter Mary, the wife of his nephew William, Stadtholder of Holland. Monmouth's death brought the whole opposition into line, making caution and moderation on the king's part the more necessary. But James blundered into the conviction that he was master of the situation. He created alarm by demanding the repeal of the Test and Habeas Corpus Acts. Finding the issue of that demand doubtful, he prorogued and then dissolved the loyal parliament. He went on to appoint Roman Catholic officers in the army, substituted Roman Catholics for Protestants in civil and even in ecclesiastical offices, packed the bench with judges who affirmed the legality of these proceedings, and appointed by prerogative a new arbitrary Court of Ecclesiastical Commission. The alienation not only of the most moderate constitutionalists, but also of the Anglican sentiment, which was the Crown's most valuable asset, was completed by the issue of a new Declaration of Indulgence in 1687 suspending all laws against Romanists

and dissenters alike, and by the ejection in the same year of the Fellows of Magdalen College, Oxford, and their replacement by Roman priests.

Trial of the Seven Bishops

James obstinately shut his eyes to the rising tide of hostility. He renewed the unconstitutional Declaration of Indulgence, and in a moment of madness ordered the clergy to read it from their pulpits. Seven of the most revered and most loyal among the bishops presented a petition against the order; whereupon he arrested them for publishing a "seditious libel."

While they were awaiting trial, a son (later called "the Old Pretender") was born (1688) to James by his second wife, Mary of Modena. The boy would succeed in priority to the two Protestant daughters by his previous marriage to Anne Hyde, daughter of Lord Clarendon. Hitherto it had been assumed that, whatever James himself might do, a Protestant successor could be counted upon. In the 17th century the wildest rumours got easy credence. Catholics believed it was a miracle; but the Protestants, who formed the great majority of Englishmen,



UNHAPPY MONMOUTH. Painted by Sir Godfrey Kneller, James Scott, Duke of Monmouth (1649-85), is shown after he had died on the scaffold for his ill-fated rebellion. Monmouth was regarded by a powerful faction as the champion of Protestantism.

National Portrait Gallery

believed, erroneously, that the boy was a supposititious child of the queen, procured from some other woman and smuggled into the palace in a warming-pan, to provide an heir who would be brought up as a Catholic. A few days later the trial of the seven bishops took place; their acquittal was hailed with popular rejoicings, in which even the soldiers whom James was reviewing at Hounslow joined with enthusiastic shouts (June 30, 1688). That night a secret message was dispatched by leading Whigs, Tories, and bishops acting together, to William in Holland, urging him to intervene, unless he wished his wife to be robbed of the succession.

William and Mary

Four months later (November 5, 1688) William landed at Torbay with 15,000 veteran soldiers, the largest disciplined force which had ever arrived in England—not to depose James, but in answer to the appeal from all parties that he should bring the king to reason. James set out with troops to meet him, but they and their officers deserted him and joined William; among them was his trusted general, John Churchill, afterwards Duke of Marlborough. James returned to London, but riots occurred; his younger daughter Anne, and her husband Prince George of Denmark, also went over to William. With William's connivance James fled to the court of his cousin Louis XIV in France, while William and Mary were invited by a provisional government to occupy, on terms, the throne vacated by his flight.

On their acceptance of these terms, the "Declaration of Right," the reign of William and Mary began (1689). The Declaration was



JAMES II'S FLIGHT TO FRANCE. This engraving by Romeyn de Hooghe depicts James II making his second, and successful, attempt to leave his kingdom to seek an asylum with Louis XIV of France.

then embodied in a statute always known as the Bill of Rights. This ensured that, while people had believed James was a king by divine right, no one could think that of William. It affirmed in favour of parliament every doctrine which had been in dispute between Crown and parliament since the days of James I. The sovereign from henceforth owed his position to a parliamentary vote. A corresponding arrangement with the Scots provisional government gave William and Mary the crown of Scotland, still an independent kingdom. The political revolution of 1689 was successful, but that of 1641 was a failure; the policy of setting parliament above king in the latter case was not a clear issue; the dispute between Church and Puritans had complicated matters.

For James and his supporters, henceforth called Jacobites, he was still the lawful sovereign; the government was a rebel government and William a usurper. In England no large body of Jacobites was ever ready to risk armed rebellion against the *de facto* government. In Scotland, Graham of Claverhouse, "Bonnie Dundee," raised the Jacobite clans, but when he fell at Killiecrankie (1689) the cause was lost. The Irish had never been consulted; the Ulster Protestants were for long in danger of being crushed by the Jacobites. James tried to make Ireland the military base for recovery of his crown, with help from French troops; but after his defeat by William at the Boyne he fled to Kinsale and embarked for France (June 1690), though his followers held out gallantly



WILLIAM AND MARY. William III (1650-1702) had been Prince of Orange and Stadtholder of Holland for a number of years when, in 1688, he was invited to deliver Britain from the misgovernment of his father-in-law, James II. He ruled from 1689 until his death, his wife Mary II (1662-94), daughter of James II and Anne Hyde, being joint sovereign with him.

After Wissing, National Portrait Gallery

for a year more. The victors took an iniquitous revenge by ignoring pledges made in the Treaty of Limerick in 1691, and imposing on the Catholics drastic penal laws which left them helpless to resist the small Protestant minority.

After the end of the Irish war there was no more serious risk of Jacobite insurrection, though there were periodical assassination plots and constant private intrigues with the exiled Court. The menace of a French invasion on behalf of James disappeared at the naval battle of La Hogue, 1692, after which the English and Dutch fleets held command of the seas.

The Stadtholder of Holland wanted not the English crown, but English aid in his lifelong battle with Louis XIV.; to secure this aid he was willing to accept the responsibility and to discharge it conscientiously. He was unpopular in England not only because of his taciturnity and cold manner, but also because he was a continental rather than an insular statesman. As time went on, he found the Whigs more inclined than the Tories to support him. He agreed with them in advocating a wide toleration for dissent, the more because High Church doctrines were difficult to reconcile with loyalty to the Revolution. But to the end of the reign the ministries were still mixed, though the Tory opposition grew stronger.

In 1694 Mary fell a victim to an attack of smallpox. William, deeply devoted to her, never really recovered from her loss. She left as a memorial Greenwich Hospital, designed by Sir Christopher Wren, which her uncle Charles II had begun to build as a palace, but which she completed as a home for disabled sailors.

From 1691 to 1697 William had been engaged with the French war of the Augsburg League, and had been reasonably but not enthusiastically supported, chiefly because Louis posed as the champion of the exiled James; but at the peace of Ryswick, Louis had formally recognized William. When, in 1700, Louis tore up his

agreement with William and accepted the entire Spanish inheritance for his grandson Philip, William set himself to organize a new European coalition to procure a partition between Philip and the Emperor Leopold's son Charles. It seemed that the Tories could see no good reason for English intervention. But in 1701 James II died, and Louis could not resist making at his bedside the pompous and impolitic gesture of acknowledging his son James Edward as the true heir to the English throne. Forthwith the whole country was ablaze with indignation. Whigs and Tories vied in acclaiming the war.

William was thrown by his horse early in 1702. His collar-bone was broken and he died a few days later. The succession had already been settled on his sister-in-law Anne, and after her (by a Tory parliament) on a cousin, Sophia, Electress of Hanover, the nearest Protestant descendant of the house of Stuart.

Beginning of the National Debt

During his reign William had devoted himself to the domestic and constitutional interests of England. From Holland were introduced better agricultural methods—in particular, the cultivation of grasses and root crops for the winter feeding of cattle. Dutch architects increased the comforts of the smaller stone and brick houses. In 1694 the first stamp duties were imposed on legal documents, and the Bank of England was founded as a sort of monopoly in the state money-lending business. A company was formed with a capital of £1,200,000, which was lent to the government, who guaranteed interest of £100,000, but not repayment of the principal. This foundation of the Bank of England was the beginning of the National Debt. On the accession of William and Mary, the chief direct tax was a hearth tax (imposed on every hearth except those in labourers' cottages), for which the window tax was later substituted. Indirect taxation included customs and excise.

LESSON 14

War and Politics under Queen Anne

THE turning point in favour of the Grand Alliance in the war of the Spanish Succession was Marlborough's victory at Blenheim in 1704, which forced the French to retire behind the Rhine. Almost at the same moment, an Anglo-Dutch squadron under Admiral Rooke captured Gibraltar and secured a permanent British naval base for control of the Mediterranean. Blenheim was capped by Ramillies in 1706, and Gibraltar by Minorca in 1708, when Marlborough also won the third of his great victories at Oudenarde.

Louis would now have been ready for a peace on reasonable terms, but the Whigs in England had set their hearts on "no peace without Spain." On that point Louis would not yield. The war went on. France was defeated by Marlborough for the fourth time, at Malplaquet (1709), but at even more frightful cost of life to victors than vanquished. The Tories, already a peace party, became predominant in England; there was no more large-scale fighting after Malplaquet, and in 1713 the Tory government in England, behind the backs of the allies,

negotiated the Treaty of Utrecht, in which Holland and Austria had to acquiesce.

In the reign of Queen Anne, the last ruler of the Stuart dynasty, an event of the first importance was the union of England and Scotland as a single kingdom. The two states had by then been somewhat uneasily yoked together under one crown for a century. At any time a union by consent would have benefited both countries, but the smaller and poorer country was naturally afraid that its interests would be subordinated to those of the larger and wealthier. Scottish antagonism to legislative union had not been diminished by experience under the union of crowns; the Presbyterian Church would be endangered by intolerance in England, and Scottish commercial interests, like those of Ireland, sacrificed to those of the English commercial community, which would make no concessions to any Scottish, Irish, or colonial rival. The colonial system was based on the theory of dominance of English interests. Friction overseas resulted, especially in Ireland. English corn, assisted by bounties, could be sold cheaper in Ireland than Irish corn could be cultivated. Irish cattle and wool production was discouraged in the interests of English farmers; nothing was done to assist Irish industry. Meanwhile Belfast developed into a Calvinist stronghold with the introduction of the linen industry by Huguenot exiles. This was subsidised by the English government and led to a considerable immigration from Scotland.



GEORGE I (1660-1727) was proclaimed king on the death of Anne in 1714, as the nearest Protestant member of the royal house. He married a cousin, Sophia Dorothea, whom he divorced in 1694. Ignorant of English, he perforce became a constitutional sovereign.



QUEEN ANNE (1665-1714). Younger daughter of James II by Anne Hyde, she succeeded her brother-in-law, William III, and her sister Mary in 1702. Of her 17 children, William, Duke of Gloucester (seen in this portrait by M. Duhl) alone survived infancy.

National Portrait Gallery

of true prosperity. The unionists found an effective lever. Scotland, like England, had settled the succession in 1688-89, so far as concerned William, Mary, and Anne. In 1701, on the death of the last of Anne's children, the English chose as her future successor the Electress Sophia of Hanover, granddaughter of James I; Scotland did not. William died; the war began; Anne might die. It was still open to Scotland, where Jacobite sentiment was strong, to recall the Stuarts. This procedure would certainly revive the old-time alliance of Scotland with France, for whom many Jacobites were even now fighting; England could not afford to risk this. Scotland, moreover, could sever the already existing union of the crowns unless the English were prepared to agree to a more substantial

union, the terms of which must include the removal of fiscal barriers and the guaranteed integrity of Scottish national institutions, especially of the Presbyterian Church. In 1706, after long negotiation, the Treaty of Union was made between the kingdoms. In 1707 the first united parliament of Great Britain met at Westminster—though the permanence of the union was not finally assured until Jacobitism, as a political force, received its death-blow at Culloden in 1746.

Tories and Whigs Hotly Opposed

Anne's reign and the war of the Spanish Succession began with a united parliament and a national ministry, but Whigs and Tories were soon at odds about the conduct of the war. Marlborough in the field and the treasurer, Godolphin, at home were identified with the Whigs; the queen was under the influence of Sarah, Marlborough's duchess. A new parliament in 1705, after Blenheim, was predominantly Whig, and Tories disappeared from the ministry by degrees. In 1709 Marlborough's position was weakened by the losses at Malplaquet. Tories and Whigs were hotly opposed on ecclesiastical policy, and here the queen favoured the High Church and Tory party. The dissenters, though unpopular in the country as Puritans, were favoured by the Whigs. A Tory lady-in-waiting ousted the duchess in the queen's good graces; in 1710 the Whig

The shrewder statesmen in Scotland realized that union under adequate guarantees was a necessary condition

ministers gave place to Tories and the Whig majority to a Tory majority in the commons.

Next year Marlborough was recalled and disgraced, and it was a Tory government that negotiated the Treaty of Utrecht (1713). It is to be noted that while the practice of forming a ministry from one party—in other words, party government—was begun under William III, it became customary under Anne; although the queen appointed and dismissed ministers as she chose without waiting for the verdict of a general election, the ensuing election regularly endorsed her action. It had not yet become a constitutional principle that ministers should be chosen from the party predominating in the commons.

The Tory party was not united. Officially as completely committed to the Hanoverian succession as the Whig party, it nevertheless included a strong Jacobite element. Its most brilliant member, Henry St. John, Viscount Bolingbroke, meant to replace his official chief, Robert Harley, Earl of Oxford. In the country,

though Jacobitism excited little enthusiasm outside Scotland, the Electress Sophia and her son George excited none at all; their succession was merely an irritating necessity, to keep the stubbornly Roman Catholic Stuarts out. Sentiment lay on one side, material security on the other. Plenty of Whigs were at pains secretly to stand well with the exiled house of Stuart; but open advocacy would be treason. In 1714, when it was obvious that Anne had not long to live, Bolingbroke succeeded in ousting his Tory rival Harley. But it was already too late; the Whigs effected a *coup d'état*. On the second day after Harley's dismissal they had captured control; on the fifth day Queen Anne was dead, and George I—son of Sophia, who had died a few weeks previously—was proclaimed.

That was the end of the power of the Tory party for 50 years. Bolingbroke fled to France. To be a Tory was to be suspected of Jacobitism. Until after the middle of the century a change of government meant that one set of Whigs succeeded another.

LESSON 15

Early Days of British Rule in America and India

THE preceding Lesson was concerned mainly with constitutional developments during the reign of Queen Anne, the last ruler of the Stuart dynasty, and with the accession to the British throne of the house of Hanover. It is now necessary to revert to colonial affairs of an earlier period.

Rival Colonists

During the reign of James I, English adventurers planted the first continuous English colony, Virginia, on the North American coast-line, in the region of the Chesapeake. In the same reign the first group of Puritans, the "Pilgrim Fathers," made a small settlement farther north at New Plymouth. In the first ten years of Charles I large bodies of emigrating Puritans established the rest of the group of colonies known collectively as New England, the largest being Massachusetts, with its government at Boston. Another Chesapeake colony, mainly for Roman Catholics, was planted in Maryland. Between New England and the southern group the Dutch established a colony on the Hudson river. English colonists also partly occupied Newfoundland on the north and some West Indian islands (to all of which Spain asserted a claim) to the south. Both French and Dutch were already in occupation of West Indian islands; the semi-piratical traders of all three nations tended to make common cause

against the Spaniards. From the days of Elizabeth I the Spanish colonists were anxious to prevent the English merchants' acquisition of wealth by trading with the Spanish-American dominions. The French had taken possession of Canada, i.e. the north bank of the St. Lawrence, up to the Great Lakes, while the occupation of the territory between the St. Lawrence and the New England colonies—called Acadie by the French, Nova Scotia by the British—was claimed by both.

Buccaneers and Privateers

During the Commonwealth the English seized Jamaica from the Spaniards; during the reign of Charles II they annexed the Dutch colony on the Hudson (New York), planted west of it the Quaker colony of Pennsylvania (named from its founder, William Penn), and founded the Carolinas between Virginia and Spanish Florida. Before Charles's death a French expedition from Canada explored the Ohio, which flows from near the Great Lakes to the Mississippi, and the Mississippi to its delta on the gulf of Mexico; if the French had occupied that river-basin, the English colonies would have been entirely cut off from expansion westward. A struggle for its possession was inevitable, but had not been foreseen in 1713, when the Treaty of Utrecht assigned Acadie to Great Britain; she was also conceded limited trading rights in the Spanish-

American ports. Divergent interpretation of these rights produced the quarrel which plunged Great Britain and Spain into war in 1739.

During the Anglo-French war, in 1689, English buccaneers in West Indian waters had helped their countrymen, while French pirates—by courtesy, privateers—had received from France high naval commands. After 1697 buccaneers were excluded from West Indian bases, where they could land and riot; instead, they robbed ships of all nations. A prominent English pirate was Edward Teach, nicknamed Blackbeard, who defied for a time the international effort to clear the seas of freebooters and filibusters. Piracy, in fact, continued throughout the long-drawn-out wars of the 18th century.

East India Company

In the east, the English had not attempted to colonise; such tentative efforts as they made were frustrated by the Dutch, who, with all the resources of the Dutch government at their backs, monopolised the rich Spice Islands or Eastern Archipelago. The English government gave only limited support to the East India (trading) Company, which had in consequence to limit its operations to India, where colonisation in the proper sense was out of the question.



TEACH, TERROR OF THE SPANISH MAIN. One of the most notorious of English pirates was Edward Teach, nicknamed Blackbeard, who in the early years of the 18th century was the dread of the West Indies and the Spanish Main. He was shot in 1718.

From Johnson, "General History of the Pirates" (Routledge)



THE OLD EAST INDIA HOUSE. Chartered in 1600, the "Company of Merchants of London, Trading to the East Indies," established a number of trading posts in India and were so successful that in the 18th century they were virtually the rulers of Bengal. From 1648 to 1716 they occupied this house in Leadenhall Street as their London office, and from here the fate of millions of Indians was decided.

William Briggs, "Relics of the East India Company"

The Mogul emperors, their viceroys, and some dependent, if rebellious, potentates were lords of the whole peninsula, with big armies at their disposal. The Company had no army with which to challenge them, though its fleets controlled the sea. At the end of the 17th century the only land it held in free possession was the island of Bombay, a gift to King Charles II from Portugal in 1661, as part of the dowry brought by his wife, Catherine of Braganza. Elsewhere the East India Company had been permitted to establish trading depots and offices called factories, and even to fortify them, at Madras and Fort William (Calcutta), for security against raiding. The Dutch had never established a firm footing, but during the first 20 years of the 18th century the French established themselves on much the same footing as the East India Company.

Presently a great change came over the Indian scene. The aggressive policy of Aurangzib (1658-1707) extended the Mogul empire, but

it grew very unwieldy; at the same time there was a revival of the historic hostility between the Muslims and Hindus which had declined under Akbar, the "Great Mogul" (reigned 1556-1605), and his son and grandson. Under Aurangzib's successors the central authority at Delhi weakened; rival viceroys of great

provinces paid only lip-service to the sovereignty of the "Padishah," which in 1739 met a shattering blow at the hands of a Persian invader, Nadir Shah (b. 1688, assassinated 1747), whose army seized and sacked Delhi. From that time the Mogul emperors became mere puppet rulers.

LESSON 16

The Age of Walpole and Chatham

THE hereditary elector of Hanover, a prince of the empire, was king of Great Britain, and his possibly divergent interests in those two capacities had to be harmonised; in England he was a king on sufferance, who would lose his throne unregretted if he annoyed his subjects. In 1715, the year after his accession, there was an abortive Jacobite rising, but Jacobite plots without effective armed support were of no avail; such support was not forthcoming, because for 20 years the French government's interests required friendly relations with the British government. Still, the risk of a Jacobite movement could never be wholly ignored.

Sir Robert Walpole

George I knew virtually nothing of the country of which he was now king, and had no choice but to trust the experienced politicians to whom he owed his throne. Government by parliament with an acquiescent king was the only possible course. A financial crisis, resulting from a mania for speculation which was

not confined to England, brought Sir Robert Walpole to the head of the ministry in 1721; in that capacity he became, in effect, dictator, and his dictatorship continued through the first 12 years of the reign of George II (1727-60).

The development of the national wealth by commerce, the avoidance of all measures, however just or profitable in themselves, which might excite heated controversy at home, the removal of trade restrictions or a calculated laxity in enforcing them, the preservation of friendly relations with European powers (especially France), the evasion of complications which could drag Britain into wars which might arise between other powers, and the elaboration of a system of bribery which assured him of parliamentary majorities and enabled him to exclude from the government any minister who attempted to oppose him—these were the features of his 18 years' domination of British policy. During those years Britain piled up material wealth, and remained at peace.

Time is clearing and enhancing Walpole's reputation. His name is no longer a byword for bribery and corruption. Living in a more corrupt age than Chatham, he had to use bribes to beat bad men. And he had no vast private income like Chatham. It has often been asserted that he declared that "every man has his price"; actually, pointing to a venal group in the Commons, he said that "all *these* men have their price."

Twenty Years of Peace

Walpole saw that England needed peace after nearly a century of foreign and civil strife. For nearly 20 years he secured it, while the foundations of British prosperity were laid at home and in the colonies. This was the great age of farming, of vast trade expansion, of Georgian houses, of Pope and Swift. Walpole was shrewd and sensible. Parliament has Walpole to thank for its Saturday holiday—he hunted his beagles at Richmond on that day; he opened his gamekeeper's letters before all others; he worked enormously hard, but said "I throw off my cares when I



ENGLAND'S FIRST PRIME MINISTER. Thanks largely to the German origin and ways of the monarchs he served, Sir Robert Walpole (1676-1745) enjoyed an unprecedented degree of power as first minister of the Crown from 1721 to 1742. This picture of him conversing with Speaker Onslow in the commons was painted by Hogarth and Sir James Thornhill.



GEORGE II (1683-1760). Son of George I, he married in 1705 Caroline of Anspach and in 1727 became king. Guided by Walpole, he acted the part of a constitutional monarch, though he was more interested in Hanover than in Britain.

After T. Hudson, National Portrait Gallery

throw off my clothes." When he died, a plain slab was placed, as he wished, over his grave in a Norfolk village churchyard. In short, he was quite different from the grand, pompous, theatrical Earl of Chatham.

The First Prime Minister

Walpole is generally regarded as the first prime minister, though he deprecated the title. As neither of the first two Georges could speak or understand English with ease, it became natural for Walpole to preside at cabinet meetings. He believed in joint responsibility for the cabinet and its loyal obedience to the prime minister. Those who would not agree with him had to go; Carteret went to govern Ireland (1724), Pulteney to lead the Opposition (1725), and "Turnip" Townshend to grow the new fashionable root crops (1730). The Whigs were his supporters, but he did his best to keep the Tories in good humour.

In 1739 Walpole's domination was brought to an end, though he retained office for three years more. War fever brought to a head the age-long quarrel with Spain over trade with Spanish America, involving smuggling and buccaneering

on one side, illegal official high-handedness on the other. In both countries popular clamour overrode common sense, forced the hand of the governments, and drove them into a declaration of war; next year both belligerents found themselves involved in the quite separate European struggle called the "War of the Austrian Succession" or "of the Pragmatic Sanction." This was marked by the bloodily spectacular battles of Dettingen (1743) and Fontenoy (1745), in which the British at first defeated, and then were defeated by, the French. In the former battle the victors were led by George II; in the latter by Marshal Saxe.

The Clans Crushed at Culloden

During the course of the struggle "Bonnie Prince Charlie" (the "Young Pretender," as he was soon called, to distinguish him from his father, James Edward, the "Old Pretender") made his daring and romantic attempt to recover the crown for his father in 1745-46. Most of the Highland clans rallied to him, and with his small force he routed government troops and advanced into England. The English Jacobites were slow to rise, and at Derby the Prince's advisers virtually compelled him to turn back. From that moment the adventure was doomed to failure. Before six months had elapsed the clans were crushed at Culloden, and steps were taken by the government to destroy the hereditary jurisdiction of the Highland chiefs and to strengthen the union of England and Scotland.

The War of the Austrian Succession came to an end in 1748 with the Peace of Aix-la-Chapelle. Britain gained neither territory nor prestige, for Louisbourg on the St. Lawrence, captured by the British during the war, was given back to France at the peace in exchange for the French conquest of Madras. In the next 15 years the struggle between France and Britain was renewed and fought to a finish.

Calendar Adjusted

In 1751 an act of parliament adjusted the calendar, which was previously to that date 11 days wrong. Many people thought they had been cheated of 11 days of their life when these were dropped out of the almanac to make the reckoning agree with the Gregorian calendar, already adopted throughout western Europe.

In 1755 the second Eddystone lighthouse was destroyed by fire. The first, erected in 1696-1700, had been washed away by a storm. The third, constructed in 1757-59, remained until 1879, when the rock



THE "YOUNG PRETENDER," Charles Edward (1720-1788) was the son of the "Old Pretender." His invasion of Britain in 1745 ended in disaster at Culloden Moor the following year.

After Le Tocque

on which it stood was undermined by the sea. This third structure consisted of blocks of stone, averaging a ton in weight, dovetailed together. Its predecessors were of timber and stone, timber predominating. The fourth and present Eddystone was built 1878-82.

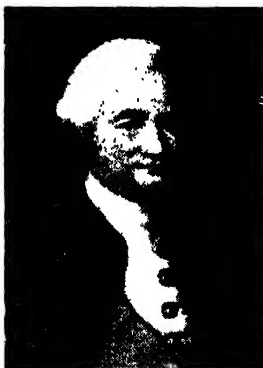
A third and more permanent monument to the Pelhams' "broad-bottomed" administration, which after a short interval followed Walpole's, was the foundation of the British Museum (1753), the money for which was raised by a lottery. Sir Hans Sloane's collections formed the nucleus of the museum.

Battle for India

The rival French and British companies in India had carefully avoided hostilities before 1744, when war was declared between France and England; the companies' servants had been merely traders residing under the protection of the native imperial government of India. The British East India Company held three posts—Madras, Bombay, and Calcutta—their whole territory consisting only of a few square miles, for which rent was paid to native governments. The British had no intention of departing from precedent, but in 1746 the French commander Labourdonnais, who was governor of Mauritius, landed in India in spite of opposition from the British fleet, assembled an army, and compelled the ungarrisoned Madras to capitulate, but made honourable terms of ransom for his prisoners. Dupleix, the French governor of Pondicherry—a man of imagination and unscrupulous ambition, who had already planned a European empire in India—jealous of Labourdonnais' interference, hampered his movements and drove him to return to France. In 1748 Dupleix repulsed the English, now supported by the arrival of a fleet, in their attack on Pondicherry, but in the same year the Peace of Aix-la-Chapelle obliged him to surrender Madras. But he did not abandon his ambitious schemes. Two native vice-regal thrones became vacant; two rival Indian candidates claimed each; the French offered their aid to one allied pair, the British to the other.

Clive and his Sepoys

The French had devised, and the British had copied, the plan of training native regiments, "Sepoys," under European officers. Both had a few white soldiers supplemented by volunteers from the civilian servants of the East India Company. One of these ex-civilians, Robert



ROBERT CLIVE (1725-74) established the rule of Great Britain in India between 1747 and 1767, although he was an officer of the East India Company and not of the Crown.

*Nathaniel Dance,
National Portrait Gallery*

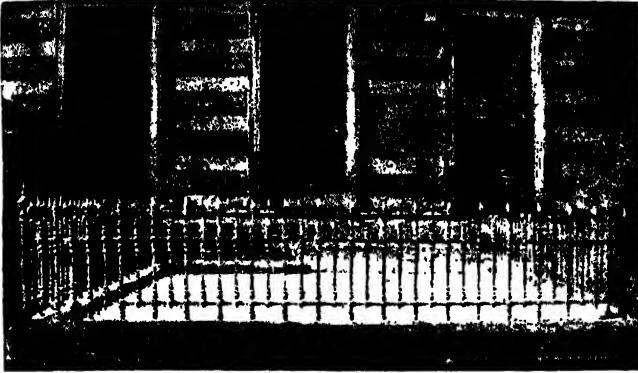
Clive, proved himself a leader and a soldier of genius. While the main armies were fighting round Trichinopoly and the French candidates seemed on the verge of certain victory, Clive, with a force of volunteers and sepoy, 500 all told, made a dash from Madras on Arcot, the capital of the Carnatic (within which lay both Madras and Pondicherry), and captured it. A force of the native allies of France was detached from Trichinopoly to recover Arcot. Clive's men held it for seven weeks; then the enemy determined to storm the fort, and advanced, driving before them elephants whose foreheads were armed with iron plates to serve as battering rams against the gates. A stampede of these beasts occurred when the garrison opened fire, and many of the enemy were trampled to death. Subsequently, after three desperate attempts and heavy loss of life, the besieging forces retired. The

British had made a poor show hitherto; now their prestige rose with Clive's above that of the French and Dupleix. The struggle ended temporarily in a draw. The French secured the throne of the Nizam of Hyderabad for their



WILLIAM PITT, EARL OF CHATHAM (1708-78). Entering parliament in 1735, he became paymaster-general in 1746, and from 1756 to 1761 was first minister in fact if not in name. In 1766 he became premier, but wrecked his influence by accepting an earldom, and resigned in 1767. He opposed the war with the American colonists.

National Portrait Gallery



SITE OF THE BLACK HOLE OF CALCUTTA. The railings shown in this picture enclose the site of the cellar, 22 feet square, known as the "Black Hole" at Fort William, Calcutta. On June 20, 1756, the Nawab of Bengal, to whom the British fort had surrendered, confined 146 prisoners in this narrow space. Only 23 survived until the morning.

candidate, the British that of the Nawab of Arcot for theirs. The French, not wishing to fight on, recalled Dupleix.

In America during this period the French pursued an aggressive policy and evoked reprisals from the British; the former planted forts on the Ohio, and in an attempt to expel them a British company was cut to pieces, though technically France and Britain were not at war.

William Pitt

In Europe war was brewing. Austrian policy was directed to the formation of an overwhelming coalition, including France, for the crushing of Prussia and Frederick the Great. The British ministry, headed by Thomas Pelham, Duke of Newcastle, seemed incapable of framing a strong policy. Newcastle resigned in 1756, and as secretary of state, William Pitt (1708-78), subsequently Earl of Chatham, became in effect prime minister. He at once took vigorous action for the prosecution of the war; his outstanding ability and character inspired the country with confidence. But he was dismissed by George II the following year, because of his support of Admiral Byng, who, having failed to save the island of Minorca from the French in 1756, had been falsely accused of cowardice at his trial and condemned to be shot. Public indignation against Byng was appeased by his sacrifice, and Pitt's popularity was undiminished. The recall of the "Great Commoner" was demanded by the public, who admired him for his conduct of the war and for his objection to bribery.

Though calling himself a Whig, Pitt was opposed to the Whig system of patronage. With power derived from popular confidence and support, he opposed power based on parliamentary connexion and influence, and thus paved the way for the new Toryism of his son, William Pitt the Younger, who later broke the power of the great Whig families. Pitt was soon recalled to take office, nominally under Newcastle, actually as chief minister.

Black Hole of Calcutta

In 1756, before the declaration of war in Europe had reached India, the Nawab of Bengal, a man of feeble intellect and inflamed by hatred of the English, suffocated a number of the British residents at Calcutta by shutting 146 of them up in a cellar where there was barely standing room, and the only inlets for air were small gratings. Only 23 survived the night's imprisonment in what was called the "Black Hole of Calcutta."

Clive was dispatched with the available troops from Madras to demand reparation. He captured Calcutta, allied himself with leading natives, who had conspired to depose the Nawab, marched against him with 3,000 men, and scattered the native army of 60,000 men at Plassey (1757). At least one-third of the enemy had intended to desert if they saw any reasonable probability of the British success. In spite of the odds, Plassey was an easily won victory. Its impression upon the native mind was tremendous; the result was that actually, though not formally, Clive, as general of the East India Company, became master of Bengal. In 1760 he returned to England, and Macaulay (*Historical Essays: Lord Clive*) observed that during the next five years "the misgovernment of the English was carried to a point such as seems hardly compatible with the very existence of society." Clive returned to India in 1765, and in his stay of 18 months he achieved

"one of the most extensive, difficult, and salutary reforms that ever was accomplished by any statesman . . . He called up all the force of his mind for a battle far harder than that of Plassey . . . When he landed in Calcutta in 1765, Bengal was regarded as a place to which Englishmen were sent only to get rich, by any means in the shortest possible time. He first made dauntless and



JOHN WESLEY. When Romney painted Wesley in 1789, the great leader of the Methodist religious revival, though 86, was still active.

From engraving, Wesley Museum

unsparing war on that gigantic system of oppression, extortion, and corruption.

Hostilities began again between French and British, but no reinforcements could reach the French, for the British held the seas. In 1760 Colonel Eyre Coote's victory at Wandewash decided the struggle, although Pondicherry was not taken till the next year. The peace of 1763 left the British without a military rival in India.

Supremacy by Land and Sea

The struggle in America followed a different course with a like result. The strategical position of the French on the St. Lawrence was strong, but in 1759 Wolfe, with the skilful co-operation of a river squadron, captured Quebec after scaling the Heights of Abraham undetected. He himself, and the rival commander Montcalm, fell in the battle. Though not at once conclusive, the fall of Quebec was decisive; by the Peace of Paris, Canada became part of the British Empire. In the same year, 1759, Hawke set the seal on British naval supremacy by his brilliant victory at Quiberon Bay, after which no substantial French squadron was again able to take the seas.

In 1760, George II, who latterly had reposed

entire confidence in Pitt, died and was succeeded by his grandson, George III. This young man of 22 meant to free himself from the personal domination of Pitt and the parliamentary domination of the great Whig families. Pitt found that he no longer had a free hand, and resigned; his successor, Lord Bute, negotiated the Peace of Paris in 1763.

Religious Revival

During the reign of George II, although intellect and common sense were more highly thought of than morality or religious aspiration, there was a religious revival prompted mainly by the writings of Bishop Butler and the preaching of Wesley and Whitefield. Whitefield, a born orator, attracted enormous crowds; his friend, John Wesley, organized what came to be called Methodism. Forbidden to preach in London's churches, Wesley followed Whitefield's example and proclaimed the truth, as he saw it, to vast congregations in the open air at Bristol, Newcastle, and other thickly populated centres. Wesley had great social and political influence, and his work, especially in remote Celtic areas such as Wales and Cornwall, contributed to a much stricter standard of national morality.

LESSON 17

The End of the First British Empire

FOR nearly 30 years after the Seven Years War, Great Britain took little part in continental politics. For ten years after his accession George III was organizing a new monarchy of his own devising, while the mother-country was quarrelling with the American colonies. When his methods had secured his temporary ascendancy in parliament, the quarrel with America developed into the war by which the old colonies won their independence, rending the British Empire into two parts, whose relations for the next hundred years were seldom friendly.

The Home Government

The intervention of hostile European powers materially affected the course of the American struggle and for a short time threatened British maritime supremacy. The home government imagined that the colonies could easily be forced to yield, being mutually jealous and having no common government, no trained troops, no trained officers, and no navy. But the American colonists organized an emergency government and found in George Washington a chief whose patience, perseverance, tact, and common sense held them together, while the commanders sent out from England neither desired nor attempted to strike crushing blows.

They occupied Boston, then evacuated Boston and occupied New York instead; contradictory orders came from England, generals failed to co-operate, and a force coming down from Canada was compelled to surrender at Saratoga (1777). Thereupon the French joined the conflict as allies of the colonies, who had now declared their independence. Spain followed suit, hoping to recover some of her own lost colonies. Holland started a quarrel on her own account.

American Independence

The French fleets in American waters outnumbered the British, blockaded a British force in Yorktown, and forced it to surrender (1781)—the decisive event of the war so far as America was concerned. Britain's tottering sea-power was saved by Rodney's defeat of the French in the West Indies, off Martinique, which enabled a peace to be made in 1783 that left England maimed but not shattered. What had been the "13 colonies" became the United States of America; Canada refused to join them and remained within the empire. Her population was still preponderantly French and Roman Catholic, in spite of the influx of "United Empire loyalists" from the lost colonies.

Meanwhile the system built up by George III broke down. He had abandoned the rôle of constitutional king for that of party leader, in order better to crush the Whigs, who, he declared, had ceased to be a constitutional party but had established their power by means of patronage and bribery. The election and voting of members of parliament was controlled by the great Whig families through an elaborate machinery of corruption. The king's victory over this machine was due in large measure to his skilful exploitation of the opportunities offered by the fruits of royal patronage. His own "corruption" was not worse than that of most other politicians of his time; unlike Charles I, he fought parliament within the limits of the Constitution. Titles, bishoprics, lord-lieutenancies, and high commands in the army and navy were among the persuasions George could offer. Moreover, he had a well-filled privy purse and plenty of pocket boroughs. Beyond all this were various alluring prospects of royal favour. It was not surprising that he succeeded in an age when ambitious men were men of fashion and it was fashionable to have a seat in parliament.

Pitt's Autocracy Broken

From 1757 to 1761 Pitt had dominated the government by sheer influence of his personality; but he could rule only as an autocrat, and his autocracy was broken partly by the desertion of some of the Whigs, partly by the influence of the new king and by the revival of the Toryism which, after the collapse of Jacobite sentiment, could revert to its traditional loyalty to the person of the sovereign. The Pretender, now no longer "young," was degenerating into a drunkard; George had the charm of youth, he was native-born, and, as he himself wrote, "gloried in the name of Briton." Public opinion still favoured Pitt, but although George found himself forced to reinstate him at the head of the ministry in 1766 (when the Great Commoner became Earl of Chatham), Pitt's health broke down, and the ministry carried on with a total disregard for all his principles. By 1770, George had achieved his object; Lord North became the head of the ministry,



GEORGE III (1738-1820), eldest son of Frederick, Prince of Wales, and of Augusta, a princess of Saxe-Coburg. He was the first of the Georges to be born and educated in Britain. He lost for Britain her 13 American colonies, and in 1811 became insane.

backed by a party of "king's friends," and North's guiding rule was to carry out the king's will. After some 12 years the system broke down because the "king's friends" proved incompetent administrators.

Warren Hastings

While the British government pursued a course which led inevitably to the loss of colonies in America, in India British leaders acted on their own initiative and built up British power. During the Seven Years War, Clive made the British responsible for the government of the province of Bengal, turning the East India Company into a territorial power in India by force of arms. In 1765 he legalised the position, obtaining official sanction for the Company's authority from the Mogul. The home government did not take over this authority from the Company, but, feeling a responsibility for the action of a British company in unprecedented conditions, it devised in North's Regulating Acts an experimental scheme of government in India which proved thoroughly unworkable, for it made a governor liable to be overridden by a factious majority of his council. Although his hands were thus tied, the governor, Warren Hastings, established the



LORD NORTH (left), leader of the "king's friends," and prime minister from 1770 to 1782. WARREN HASTINGS (right) entered the service of the East India Company in 1750, and in 1773 became governor-general of Bengal. Recalled in 1785, he was charged with administrative malpractices, but after a trial lasting seven years he was acquitted.

Company's position among the crowd of rival powers. He was driven to employ methods usual among Orientals but from a western point of view often unscrupulous. The only alternative was the elimination of the Company. Hastings, returning to England in 1785, found himself not only not applauded for having retrieved a very difficult situation, but also faced with impeachment.

The disasters of the American war wrecked North's ministry, and with it the king's method of government. In 1783 a coalition ministry was in charge of the peace settlement and of a new scheme for administration in India. Over that scheme the coalition was wrecked; William Pitt, Chatham's younger son, became prime minister in December 1783, and a general election returned him to power in April 1784.

LESSON 18

First Premiership of the Younger Pitt

GORGE III has been underrated as a ruler and as a man. The publication of his correspondence has revealed the fact that he was by no means the pig-headed reactionary depicted by some older historians. During the events which led up to the War of American Independence, for example, it was the king, not his ministers, who advocated a policy that might have averted the breach. As a man he was unlike his grandfather and his father, and his court was a model of propriety. But his popularity was mostly due to the fact that by birth and by education, as well as by taste, he claimed to be an Englishman. Towards the end of the century the country was profoundly stirred by events in France. There was a large and influential party in Britain with democratic and revolutionary tendencies, and it is difficult to say what might have happened but for the sympathy and loyalty awakened among the people by the ageing king's mental infirmity, which increased rather than lessened his popularity.

When Chatham's second son, William Pitt, who had entered parliament in 1781, took office as prime minister in 1783, he accepted the position from the king—who wanted to free himself from the coalition under Lord North and Charles James Fox—and adopted the established Tory doctrine that ministers were to be selected as well as dismissed by the king and not by the house of commons. He reintroduced the long-forgotten principle of appealing to the constituencies before final decisions could be taken. The coalition, now in opposition, had members enough in the house of commons to outvote him; he refused to resign or dissolve parliament, however, until he could have his opponents at a disadvantage. His popularity with the nation increased, he had the royal

support, and members began to change sides, until in 1784 Pitt thought it safe to risk an election. Many of Fox's supporters lost their seats, though he himself was triumphantly returned at a famous Westminster election, and continued to lead the opposition for some twenty years.

Reforming Measures

Pitt's first administration lasted for 17 years. During the first nine years he showed great constructive ability; the period was marked by prosperity and peace in England. Praised as the ablest of financiers, the minister won the complete confidence of the country with his plans for reconstruction after the disasters and mismanagement of the American war, together with the creation of a workable constitution for the British dominion within what was officially the Mogul empire; failure of an attempt to provide such a constitution had brought down the coalition ministry under Fox and North.

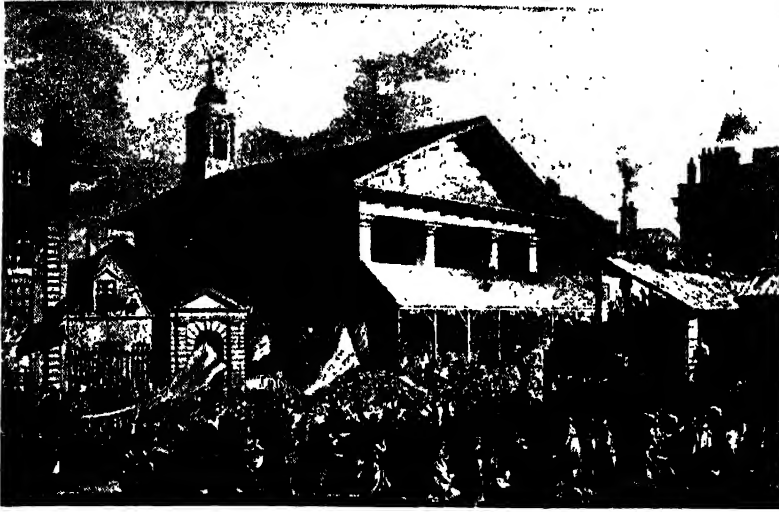
Pitt's successful financial measures were based on the free trade doctrines of Adam Smith's *Wealth of Nations*. Commerce advanced rapidly; principally because of the wealth gathered in the years of peace, Britain bore far better than any other country the enormous financial strain of the years of war that followed. This development of wealth was furthered, to the temporary detriment of the manual workers, by the new manufacturing power of which Great Britain had at first almost an entire monopoly. Living conditions among the poorer classes, especially in the new industrial towns, were usually abominable.



CHARLES JAMES FOX (1749-1806), a Whig leader, one of Pitt's chief rivals, and one of the greatest orators of his day. He was foreign secretary 1782-83 and again in 1806.

More Factory Work

James Watt (1736-1819) took out his first patent for a steam-engine in 1769, thereby



"FOX FOR WESTMINSTER!" This print shows the uproarious crowd in Covent Garden, jostling one another amid waving banners, at the famous Westminster election of 1784, which returned Charles James Fox in opposition to the Tory candidates supported by George III. It is commonly supposed that the Duchess of Devonshire purchased votes for the Whig candidate with her kisses.

British Museum

inaugurating the new age in industry and in life. Watt was not the inventor of the steam-engine, Thomas Savery having made the first in 1698, but Watt discovered how to apply steam power to the driving of machinery on a large scale; the machinery required iron instead of wood; the iron needed furnaces, which required coal. Great Britain had the coal, the iron, and the inventors; these between them gave the country the monopoly of large-scale manufacture, turning it into the world's workshop as well as its greatest mart. Machinery wiped out the domestic hand industries, which to the rural population had meant the difference between decent and abject poverty. They could not live on the land. Some became farm labourers; the rest drifted to the manufacturing areas, ready to take any wages which would keep them alive. The country accumulated wealth, but during the period of adjustment masses of the

unemployed starved. Watt himself did not realize the great extension of factory work, or the expansion of the cotton industry made possible by his application of steam to wheels, when in 1781 he patented a method of applying the steam-engine to rotary motion.

Control in India

Pitt's new act for the government of India was passed in 1784 and, with some modification, remained in force till 1858. It established in England beside the Company—to which the government of India was directly responsible—a parliamentary board of

control, which might on occasion overrule the Company. In India it set up an autocratic governor-general with an advisory council, who had power to act against instructions from home, but did so at his own peril. In his hands was the conduct of the administration on the spot. The Company had its own sepoy army, wholly under British officers, supplemented by regiments of the British army. Its civil administration was in practice, if not in law, confined as regarded the higher grades to British officials. The impeachment (1788-95) of Warren Hastings, though he was ultimately acquitted of every one of the charges brought against him, made it clear that a policy of oppression in India would be sternly criticised at home. With hardly an exception the governors who were sent out worthily discharged their tremendous task.

In 1788 Great Britain entered into possession of a new continent, Australia. The first English seaman



WILLIAM PITT THE YOUNGER (1759-1806). Second son of William Pitt, 1st Earl of Chatham, he entered parliament in 1781, became chancellor of the exchequer in 1782, and prime minister in 1783. Resigning 1801, he was again premier from 1804 until his death.

After Gainsborough; Iveagh Bequest; photo, Pullman

to reach it had been William Dampier in 1688, but it was ignored until Captain Cook's arrival in 1770. In 1788 the first English settlement in Australia was made at Sydney Cove in New South Wales.

Canada was a French province, with French traditions and customs and a French population, into which had flowed from the old American colonies a British population loyal to British traditions and the empire. Pitt's solution of the problem of amalgamation of these two elements was division of Canada into two: the upper part (Ontario) mainly British, the lower (Quebec) mainly French, each having its own appointed governor and elected legislature (1791).

The beginning of the French Revolution, signalised by the fall of the Bastille (July 14, 1789), was viewed at first with a qualified approval in Britain by the democratic party. The Radical Whig, Charles James Fox, even went so far as to declare a welcome to it. By the close of 1792 public feeling had changed. The September massacres, the fall of the monarchy, the attitude of aggressive interference with other countries adopted by the Republic, and the open violation of Dutch treaty-rights that had been guaranteed by both France and Great Britain, followed by the execution of Louis XVI, drove Pitt to join the European coalition, with which France was already at war, in February 1793. The Allies got small credit out of the conduct of that war on the Continent; Great Britain's own small share in it was ineffectual, but not actually disastrous. Her mastery of the seas, and monopoly of sea-borne commerce, were threatened in the Mediterranean, but saved by the battle of Cape St. Vincent (1797), and overwhelmingly confirmed by Nelson's annihilation of Bonaparte's



SATIRE ON THE IRISH UNION. This print of 1799 shows Pitt driving the Union Coach with the Scottish members safely inside. On top of the coach a figure, apparently Melville, throws the shells of nuts to the Irish members seated precariously at the back. Catholic emancipation, promised as a condition of union, was not forthcoming.

British Museum

fleet in Aboukir Bay (the battle of the Nile, 1798). In 1801 Britain was left to face the French forces alone; in that year Pitt and his ablest colleagues resigned, and next year the Peace of Amiens recorded a temporary truce.

Union of Great Britain and Ireland

Pitt's last act before resignation was the legislative union of Great Britain and Ireland. His resignation was caused by the king's conscientious refusal to sanction, as a part of it, the Catholic Emancipation to which Pitt was pledged up to the hilt. Thenceforward Irish members sat in the house of commons at Westminster, and Irish peers in the house of lords. But still, as in England, no Roman Catholic and no Protestant dissenter might sit. But in England, Roman Catholics were few; in Ireland they were four-fifths of the population, and half the Ulster Protestants were dissenters. The union left untouched one of the primary grievances of the Irish people.

LESSON 19

The Napoleonic War and its Aftermath

WHEN the treaty of Amiens was made, both Napoleon and the British government wanted peace, but the British suspected from the beginning that Napoleon intended to turn the peace to account for aggressive purposes. They therefore delayed carrying out the promises to evacuate Malta, Egypt, and the French stations in India, which British forces

had occupied. Recriminations ensued; and in May 1803 France and Britain were again at war.

Napoleon proceeded forthwith to concentrate a big army of invasion at Boulogne, but could not carry it to England so long as the British fleet commanded the Channel. In 1805 he schemed to decoy the main British fleet, under Nelson, into distant waters while the

Boulogne army was hurled upon England. At first the scheme prospered; Villeneuve with his fleet managed to evade Nelson, slipped out from Toulon and vanished. Nelson, having guessed their destination, went in pursuit to the West Indies. Villeneuve eluded him again, recrossed the Atlantic at full speed to raise the blockade of the Brest fleet, found a British squadron waiting to intercept him, abandoned the attempt, and made his escape to Vigo and thence to Cadiz (July). By now Nelson was on his way back to the Mediterranean, and Napoleon realized that his plan to clear the Channel had failed. Villeneuve, taunted by Napoleon into sailing out of Cadiz with the Franco-Spanish fleet, was caught in the open by Nelson. The Franco-Spanish fleet was destroyed; Nelson fell, at the battle of Trafalgar, in the hour of his greatest triumph. Thenceforth the seas were in effect closed to Napoleon and his allies.



HORATIO VISCOUNT NELSON.
The greatest figure in British naval history, Nelson was born in 1758 and killed in the course of his decisive victory against the French at Trafalgar in 1805.

L. F. Abbott, National Portrait Gallery

sion of smuggling rather than to suppression of British trade with the Continental countries. The French themselves traded secretly with Britain, and Napoleon's Grand Army invaded Russia shod with boots imported from England through Hamburg.

Peninsular War

Pitt died in January 1806, but the war was continued under the "ministry of all the talents" of Grenville and Fox, and its successors under Portland and Perceval. The first act of the Portland ministry was to seize the neutral Danish fleet at Copenhagen lest it should pass to the French; this act was widely condemned even in England (1807). In 1808 Britain extended the area of operations by dispatching troops to deliver Portugal from the French army of occupation and to support the Spanish insurgents. A small force compelled the French to evacuate Portugal; when Napoleon led an irresistible advance across

Berlin Decree

When Villeneuve failed to reach Brest, Napoleon abandoned the invasion scheme and flung his armies against the coalition forces of Russia, Prussia, and Austria—a coalition engineered by Pitt, who had returned to office in 1804. In a few weeks Napoleon completely defeated the Continental powers; from Berlin in 1806 he launched the Berlin Decree, creating what he called the "Continental system," intended to bring Britain to her knees. Henceforth no British goods were to be admitted to any European port; her trade would be ruined, her wealth would collapse, and she would be rendered powerless. Britain retaliated by Orders in Council in 1807, whereby all Continental ports under the control of France were declared to be in a state of blockade, and all ships bound for them liable to capture unless they had first touched at a British port.

Milan Decree

In the same year Russia joined the French *bloc*, and in December, by Napoleon's Milan Decree, all neutral vessels attempting to touch at a British port before landing their cargoes on the Continent were made liable to seizure by the French. As Britain held command of the seas, the "Continental system" led to a vast exten-



DUKE OF WELLINGTON (1769-1852). A great soldier and leader of men, Wellington achieved a series of victories against Napoleon's armies that culminated at Waterloo. Subsequently he held many high offices in the state.

Count D'Orsay, National Portrait Gallery



WATERLOO. At La Belle Alliance farm, on the battlefield of Waterloo, Wellington and Blücher met on the evening of their day of triumph in June 1815.

Spain, Sir John Moore attacked the French communications. Napoleon, misjudging Spanish and British powers of resistance, withdrew to work out his policy elsewhere in Europe, leaving his marshals to complete the subjugation of Spain and drive the British into the sea. Moore was killed at Corunna in January 1809; three months later Arthur Wellesley (Wellington) took up the command, drove Soult over the Portuguese border, and in July routed Victor at Talavera. In the same year a British diversion against Antwerp, well conceived but shockingly mismanaged—the Walcheren expedition—ended in complete disaster.

For the next four years Wellington, with much help from Spanish guerrillas but little from Spanish regulars, fought the Peninsular War against a succession of French marshals, compelling Napoleon to keep three field armies in the Peninsula, each of them larger than Wellington's own. Wellington never had a force sufficient to do more than deliver a skilful blow or two and then retire behind the impregnable lines of Torres Vedras covering Lisbon. In 1813 Napoleon, after his disastrous Russian expedition, withdrew troops from Spain; Wellington won the decisive battle of Vittoria, and drove the French armies, in spite of Soult's masterly conduct of the retreat, through the Pyrenees on to French soil. In April 1814 they fought a last indecisive battle at Toulouse, in ignorance of the fact that Napoleon, overwhelmed by the armies of the rest of Europe, had already abdicated.

There ensued the Congress of Vienna, at which Britain was represented by Wellington and Castlereagh,

both Tories. In March of the next year the congress was rudely interrupted by the return of Napoleon from Elba and his triumphant entry into Paris. Wellington was put in command of a mixed force of British, Dutch, and Hanoverians, with headquarters at Brussels. At Quatre Bras, on June 16, 1815, he checked Ney, enabling Blücher to retreat; two days later the decisive battle was fought at Waterloo. From noon until late afternoon the British and their allies held the ridge; the French gained some ground but failed, despite the furious charges of their cavalry, to break the British squares.

Then, about four in the afternoon, Blücher and the approaching Prussians made their presence felt on the French right. Napoleon forthwith hurled the Old Guard at the British right centre, but it was mowed down by front and flank fire, and at last the British swept forward, just as the Prussians began to roll up the French right. The French were soon in headlong flight, with the Prussians in pursuit. Napoleon escaped from the field, but four weeks later surrendered himself on board a British frigate, and was sent for life to St. Helena.

The years following the close of the Napoleonic conflict were full of social unrest and misery. Peace and plenty had been expected; instead



THE PETERLOO MASSACRE.—On August 16, 1819, some 60,000 Radicals demonstrated in St. Peter's Field, Manchester. The police, by order of the magistrates, attempted to arrest the popular leader, "Orator" Hunt, and when this proved impossible, the magistrates gave the order for yeomanry to charge and disperse the crowd. Several people were killed and about 500 injured. The memory of Waterloo was still fresh in the public mind, and so the name Peterloo was coined in derision. This drawing by George Cruikshank is entitled "The Massacre of Peterloo, or Britons Strike Home."

there was large-scale unemployment. Many ex-soldiers were seeking work, harvests were poor and bread was dear. Foreign nations began to produce their own manufactures in place of those which British manufacturers had managed during the war to sell to their customers on the Continent; workmen discharged as a result of the slump were angered by the sight of the new machines coming into favour among employers in the textile trade.

Peterloo Massacre

In 1816 political and economic conditions led to riots in many parts of the country. In the next year the Tory government were so alarmed at the widespread unrest that they suspended the Habeas Corpus Act for a year. In 1818 there was a brief spurt of industrial activity, but distress was again rampant the following year. On August 16, 1819, a great meeting of Radical persons desirous of radical alterations in the organization of the state—held in St. Peter's Field, Manchester, was broken up by the military; in the subsequent panic eleven people were killed and 500 injured. This event was ironically dubbed "the battle of Peterloo." Shortly afterwards the government passed the "Six Acts" of 1819, prohibiting any meeting of more than 50 persons "for the consideration of grievances in Church and state" save by the approval of the magistrates, forbidding the use of arms and instruction in military drill, increasing the punishments for seditious libel, and imposing stamp duties on the popular press, in an effort to stem criticism.

Penal Reforms

George III died in 1820, and was succeeded by his eldest son as George IV. The Tory ministry of Lord Liverpool—who became premier in 1812 after the assassination of Spencer Perceval by a madman in the lobby of the house of commons—continued in office with Lord



GEORGE IV (1762-1830). Eldest son of George III, he acted as regent during his father's periods of insanity, and succeeded him on the throne in 1820.

Castlereagh and, after his suicide in 1822, George Canning, as foreign secretary. In that year Sir Robert Peel became home secretary, and at once set to work to reform the brutal penal code still in use at that time. In 1823 Parliament reluctantly concurred in his proposal that the death penalty should be abolished in respect of about a hundred crimes. In 1829 Peel established the London police force; his name still echoes in their nickname "bobbies." Canning succeeded Liverpool in 1827, but died within a few months. His place was taken by Lord Goderich, who in 1828 was replaced by the Duke of Wellington.

By now reform was in the air, as it were. The cause of progress had been retarded by the "Cato Street Conspiracy" of 1820, which aimed at the murder of the whole cabinet. In 1824 and 1825, thanks mainly to Joseph Hume and Francis Place, the laws against workmen's trade organizations (then called combinations) had been modified so that trade unions became possible; and in 1828, as the result of a strenuous agitation led by Daniel O'Connell, called "the Liberator," the Test and Corporation Acts—relics of the anti-Catholic bigotry of the 17th century—were removed from the statute book. In 1829 O'Connell scored a yet greater triumph—the emancipation of his fellow-religionists from the penal disabilities which they had endured for so long. When George IV died in 1830 the reformers were preparing for a further advance—the reform of parliament itself. The general election of 1830 returned a Tory majority, but in November the opposition, supported by some disgruntled Tories, defeated the government in the commons. Wellington at once resigned and the king (William IV) entrusted the formation of a ministry to Lord Grey, leader of the Whig party, which, save for a brief interval, had not held office since the days of the American War.

LESSON 20

British Politics in the 19th Century

THE world which confronted the Whigs when they took office in 1830 after so long a banishment from power was very different from that which Lord Grey had known when he first entered parliament 44 years earlier, or when he held office under Fox in 1806. For a generation and more, dread of revolution and

propaganda had scared the governing and propertied classes into repression of popular liberties. The movement towards large-scale farming and the development of machinery had combined so as almost to eliminate the yeoman farmer and to effect a huge displacement of labour; urban conditions encouraged the



QUEEN VICTORIA (1819–1901). Granddaughter of George III, she succeeded her uncle, William IV, on the throne in 1837. This portrait of her in coronation robes was painted by Sir George Hayter.

National Portrait Gallery

improvident multiplication of families living habitually on the margin of destitution, while the national need for self-support during war-time brought under cultivation a quantity of land which could be worked only when the price of its product was exceedingly high. The new machinery meant that until there was a compensating expansion of the market the supply of labour must greatly exceed the demand for it; unemployment meant destitution, while wages were barely at subsistence level.

Of these grievances was begotten class hostility, involving on one side a demand for political power and on the other a determination to withhold that power. The constitutional problem of the past—the relations between Crown and parliament—was more or less settled; its successor was the problem of the constitution of parliament itself, a body under the domination—in both houses—of the land-owning class.

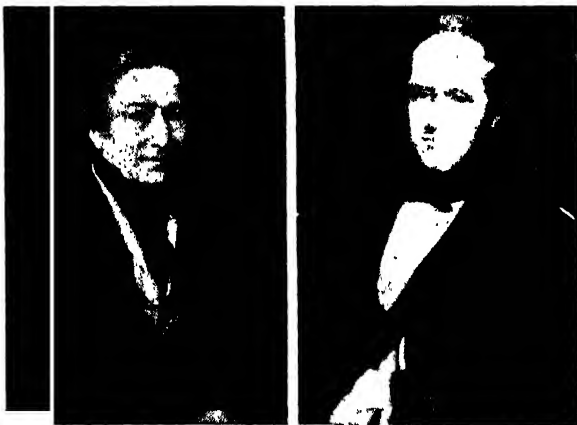
Repression—the reaction against the gospel of Rousseau—was active when the Napoleonic wars ended in 1815, but as years passed the Jacobin boggy gradually lost its terrors; government severity offended the public conscience. The commercial classes resented their

lack of political power, and reverted to pre-war Whig demands for parliamentary and social reform.

Grey's Reform Ministry

The Whigs came into office under Lord Grey in 1830, and the first Reform Bill was introduced the following year. It was defeated, but a general election returned a big Whig majority. A new Reform Bill was brought in, carried in the commons, and rejected by the lords (1831). Grey, instead of again appealing to the country, brought in a third Reform Bill, obtaining from the king a promise to create enough peers to ensure the passage of the bill should the lords prove recalcitrant. Rather than destroy the character of the house, the Duke of Wellington persuaded a hundred of its members, who detested the bill, as he did himself, to abstain from voting; and thus it was passed. It abolished a crowd of "rotten" boroughs and the pocket boroughs which were virtually in the gift of landed magnates; elevated the greater towns, hitherto mostly unrepresented, into parliamentary boroughs; extended the franchise, making it uniform in boroughs (where its basis continued to differ from that in the counties); and, in effect, transferred the bulk of power among the electorate and in the house of commons from the landed gentry to the manufacturing and trading community. The bill gave no political power to artisans and employees generally. But the new parliament which met in 1833 was still predominantly one of big landowners. In 1837 William IV died, and was succeeded by his young niece, Victoria.

Apart from foreign affairs, industrial and economic reconstruction became the main



VICTORIAN STATESMEN. Left, Sir Robert Peel (1788–1850). By instinct a Conservative, force of circumstances made him a progressive leader. Right, Lord Palmerston (1784–1865), who enjoyed immense popularity and held many offices in both Tory and Liberal governments. Left, Sir T. Lawrence; right, J. Partridge, *National Portrait Gallery*

preoccupation of government. The unrest of the artisan class was allayed but not removed; its expression in the Chartist movement for further immediate democratic reforms created something like a panic in 1848, the year of revolutions on the Continent, but collapsed rather ignominiously.

Parliament, with much hesitation, had already begun to regulate relations between employers and employees by abolishing or limiting the labour of children, adolescents, and women, and enforcing sanitary rules in mines and factories, while still rigidly forbidding combinations—whether of masters, who had no need of them, or of men, who were powerless to bargain without them—for raising or lowering wages. The Corn Law, created in 1815 to save inferior land from falling out of cultivation, made the price of bread and the cost of living intolerably high for the poor; still, expanding markets were diminishing unemployment. Rigid protection of industries other than agriculture was being slowly displaced by the theory of reciprocity, the half-way house between protection and commercial free trade; the manufacturers, far better equipped than their foreign competitors, were finding that they gained more than they lost by the lowering of tariffs. When the names Whig and Tory were giving place to Liberal and Conservative, the Anti-Corn Law League in the manufacturing interest was urging the doctrines of free trade, but both parties were still only half converted.

Repeal of the Corn Law

A Conservative government led by Sir Robert Peel lowered several tariffs, but his party began to rebel when he went further. A potato famine in Ireland, where potatoes were the staple food of the peasantry, convinced Peel that cheap bread was the primary necessity, and in 1846 he carried the repeal of the Corn Law with the support of the Liberals, in the teeth of half the Conservative party, from whom the Peelites permanently severed themselves. Peel himself was driven from office; the Peelites presently, though not immediately, coalesced



LORD SALISBURY
(1830-1903). Staunch upholder of Conservative principles, he was three times prime minister.

After Richmond



GLADSTONE AND DISRAELI. During much of the Victorian era, British politics became a struggle between William Ewart Gladstone (1809-98) and Benjamin Disraeli (1804-81), created Lord Beaconsfield in 1876. The Queen's hostility to Gladstone (on the left) was as marked as her friendship with Disraeli.

Left, Sir John Millais, National Gallery

with the Liberals, and in the budgets framed by Gladstone (1809-98), formerly a Conservative but now chancellor of exchequer in the Liberal government, all duties disappeared except those which applied equally to home products and imports. Great Britain held such a lead over all competitors in productive power that for the rest of the 19th century the idea of reviving tariffs was rejected by both political parties. The main economic question became that of readjusting bargaining powers as between employers and employed, "capital" and "labour," through the now legalised activity of trade unions of manual workers.

Extension of the Vote

With the disappearance of Chartism, the feeling grew that the admission of the "intelligent artisan" to the parliamentary franchise could not long be withheld. Though Liberal governments were almost continuously in office, this movement towards democracy was suspended for 20 years in deference to the Liberal chief, Lord Palmerston (1784-1865). Thus it was a brief Conservative ministry, formed after his death under the premiership of Lord Derby and with Benjamin Disraeli (1804-81) as chancellor of the exchequer and leader of the commons, that passed, in 1867, the second Reform Act, which gave the vote to nearly a million male artisans and other town-dwellers. But still the poor agricultural labourer and all such as were not in constant employment were

excluded from the franchise and it was not until 1884 that a Gladstone ministry, after a sharp tussle with the lords as to procedure, passed the third Reform Act, which gave the electorate (so far as men were concerned) a democratic shape, and rearranged the constituencies—again with the co-operation of the opposition.

The last 30 years of the century were a period of active legislation, the protagonists being Gladstone almost throughout, Disraeli (who became Lord Beaconsfield in 1876), followed by Lord Salisbury (1830-1903) from 1881; and Parnell (1846-91), the leader of the agitation for Irish home rule—the question which grew in importance until it broke up the Liberal party. Foreign relations apart, the other matters on which parties divided were chiefly industrial problems and the demands of Non-conformity for the disappearance of Church control over education.

The Irish Question

Gladstone attempted to allay Irish grievances by disestablishing the Anglican Church in Ireland (1869) and reconstructing the whole system of land-tenure there, while a constant underground civil war of outrages and assassinations

was carried on by agitators whose supporters were for the most part among the Irish population of the U.S.A. Successive governments dealt with the Irish question by repressive emergency acts alternating with concessions, until the elections of 1885 definitely converted Gladstone to home rule; half his party followed him, while the rest formed for a time a separate group, but eventually coalesced with the Conservatives as the Unionist party.

In 1886 Gladstone's first Home Rule bill was defeated, whereupon Lord Salisbury came into power, supported by the Liberal Unionists. In 1892 Gladstone was again returned to office but not to power, since he was dependent on the support of a disunited Irish party in the commons, while the lords, refusing to recognize the government as representative of the electorate, rejected his measures wholesale, including a new Home Rule bill. Failing health and old age forced the "Grand Old Man" into retirement in 1894. Liberals were again in disagreement on questions of imperial policy; and, after a brief tenure of office by Lord Rosebery, a general election gave the Unionists a sweeping majority, which soon found itself faced in South Africa with the problem of Boer v. Briton.

LESSON 21

The Expansion of Britain

FROM the study of home affairs in Great Britain during the Victorian era attention may now be turned to the imperial developments overseas.

Australia

New South Wales was the name given to the territory where the first Australian (convict) settlement was made under a military governor at Sydney Cove, near Botany Bay, in January 1788. Land was allotted to convicts when their term of punishment ended, and to the soldiers in charge when their term of service was over. For many years emigration from Britain was slow. To prevent occupation elsewhere by the French, who had sent out a prospecting expedition, British posts were established along the coast of New South Wales and on the island of Van Diemen's Land, later called Tasmania and made a separate governorship.

More and more territory was occupied. Settlement expanded into the interior; and in 1829 at Perth, on the other side of the continent, the colony of Western Australia was founded. In 1836 the province of South Australia (with its capital Adelaide) was separated from New South Wales; in 1851 Victoria (Melbourne), and in 1859 Queensland (Brisbane). Both Western and South Australia were formed by private companies with little encouragement

from the British government. They struggled hard for existence, helped by the fertility of the coastal belt and the excellent climate. Colonists were attracted in greater numbers when transportation was dropped in 1840 (except in Tasmania, where it continued until 1853); and a tremendous impulse was given to emigration from Great Britain by the discovery of gold in Victoria in 1851, hosts of miners seeking their fortunes at Ballarat and Bendigo. Thus industry was added to the agricultural interests of sheep-farming and corn-growing.

In 1842, partly-representative government was introduced into New South Wales, which had begun with a purely military government; in 1850 this and the other colonies, with the exception of Western Australia, were granted what was in effect autonomous government on the same basis as that of Canada. Responsible government was extended to Western Australia in 1890. Union of the states in the Commonwealth of Australia was proclaimed in 1901.

New Zealand

The two islands of New Zealand were colonised many years after the foundation of New South Wales. Settlement was impeded by the resistance of the vigorous and intelligent native Maori race. Annexed in 1839, the first settlement of New Zealand was made at Wellington,



MELBOURNE, AUSTRALIA, IN 1857. The site of Melbourne was first occupied by white men in 1835, and two years later the settlement was named after the British prime minister of the day, Lord Melbourne. Above is a view of Collins Street when the city's expansion was proceeding apace as the result of the gold discoveries.

founded in 1840, in which year the treaty of Waitangi was made with the Maori population. Although native revolt followed, in 1845 Sir George Grey did much towards restoring peace, which was later broken by two wars provoked by racial hatred and disputes as to ownership of land, before harmonious development could again be secured.

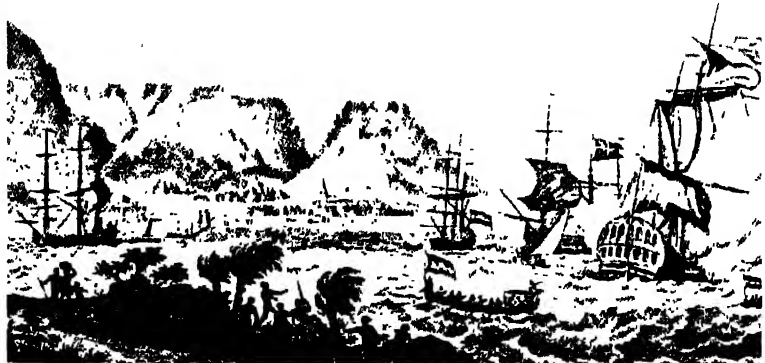
South Africa

The Dutch Cape Colony in South Africa was added to the empire in 1814 in spite of the objections of the long-established Dutch settlers. The position was complicated by the presence within the colony (which lay south of the Orange River) of Hottentots, and beyond that river of warlike tribes of negro Kaffirs; the Dutch were mostly farmers (Boers), generally dependent on slave labour. In 1833 parliament in England abolished slavery throughout the empire, paying compensation which in the view of the slave-owners was inadequate. Thereupon many Boers, deprived of a substantial part of their property and of their supply of agricultural labour, trekked across the Orange river (1837) to escape govern-

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Canada

By Pitt's Canada Act (1791) the colony north of the St. Lawrence was divided in two: Upper Canada, peopled mainly by emigrants from the New American Republic or from Britain; Lower Canada, with a population mainly French. In both areas, however, administrative posts were almost monopolised by certain families of British descent. The French-Canadians found an able leader in Louis Joseph Papineau, who opposed the union of Upper and Lower Canada; he formulated the grievances of his party, and worked from 1815 to 1837 against the imperial government. In 1837 French dissatisfaction led to revolt in Lower Canada, followed by a rising in the Upper Province. Though not actively concerned in fighting, Papineau was "wanted" for high



CAPE TOWN IN THE 18TH CENTURY. This Dutch engraving dated 1777 shows Cape Town when it was the chief port of call on the sea route to the East and known as the "Tavern of the Indian Ocean." The Cape was ceded to Britain in 1814, and the first British settlers arrived there in 1820.

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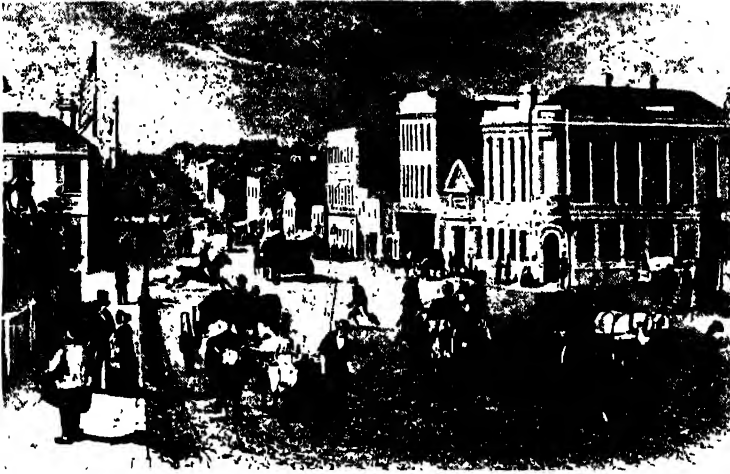
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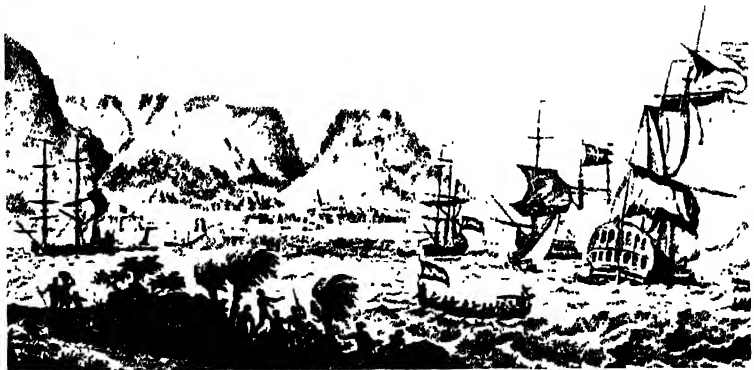
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treason, but eventually escaped to Paris, whence he returned, pardoned, in 1847.

The disaffection, being very limited, was promptly suppressed. But public opinion in Britain was stirred, and Lord Durham was sent out to Canada in 1839 to investigate grievances. His report urged the reunion of the two provinces, with responsible government. The first recommendation was effected by the Act of Reunion in 1840; home rule was granted in 1847, and was soon extended to the trans-St. Lawrence colonies. In the same decade the Maine and Oregon boundary disputes with the United States were settled by the British government in a manner far more satisfactory to colonial sentiment. After 1867, when by the wish of the Canadians the British North America Act created the Dominion of Canada as a confederation of provinces, Canada began to progress as a self-governing nation.

In every case the autonomy bestowed on British colonies included, in marked contrast to the old colonial theory, the complete control of tariffs; while on the victory of free trade doctrines in Great Britain the preferences hitherto given to colonial products were abolished. It was then assumed that free trade would also be imposed in the colonies. But they required protection to enable their growing industries to thrive; Canada, in particular, needed protection against lively competition from the United States. In 1858 the Canadian Assembly set up a small tariff on imports from both Britain and the United States, which was increased in 1859.

India

The expansion and consolidation of the British dominions or *Raj* in India were almost continuous from the close of the 18th century onwards, though only two viceroys, Wellesley (sent as governor-general to India in 1798) and Dalhousie (in 1848) set out with the deliberate policy of increasing the territory under direct British administration. One after another was forced into war by the action of some Indian potentate, who could believe that he had been beaten only if he was deprived of territory. The wars against the Marathas (1803-05 and



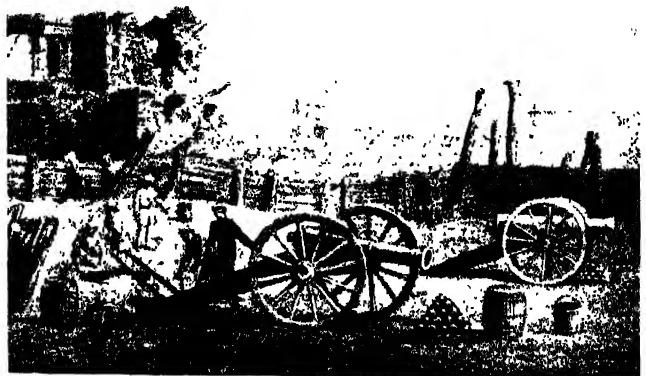
LORD DALHOUSIE (1812-60). He was governor-general of India 1847-56 and, though criticised for his policy of annexation prescribed by the East India Company, was a great administrator.

National Portrait Gallery

1817-19), Nepal (1814-15), Sindh (1843), where the British were the aggressors, and the Punjab (1845-49) are notable examples. Oudh was annexed in 1856 on account of the incorrigible misrule of its native potentates. Wellesley had at the beginning of the century acquired much territory by his system of "subsidiary alliances," whereby princes were provided by the British government with forces maintained from the revenue of districts ceded to it.

Dalhousie's Vice-royalty

The eight strenuous years of Dalhousie's vice-royalty were a turning-point. In certain respects they crowned the process of a century of development and completed the expansion of the area under British administration—the rest being under the rule of hereditary Indian dynasties—by application of the legal doctrine of escheat (lapse), whereby thrones to which there was no legal heir lapsed to the supreme government. This had been evaded by allowing the adoption of an heir by princes who had no son. By refusing sanction to several adoptions, Dalhousie impounded large territories, to the alarm of other princes. On quite other grounds, and in answer to direct challenge, he annexed the Punjab and Pegu by force of arms. The viceroy was convinced that the British Raj was immensely beneficial, and that annexation was desirable; this view was resented by the



BESIEGED LUCKNOW. From July 2 until September 25, 1857, the European inhabitants of Lucknow, with a garrison of 300 British and a few hundred loyal sepoy, were besieged in the government compound by the mutineers. This picture shows the "Cawnpore battery" as mounted during the siege.

Muslims who had formerly been masters of India, and by Hindus such as the Marathas, who had hoped to win a supremacy themselves.

Indian Mutiny

Followers of the two religions were usually irreconcilable, but in 1857, when Dalhousie had left India, they joined to get rid of the common adversary. Their propaganda spread disaffection in the sepooy army, resulting in the Mutiny, which broke out on May 10 at Meerut. Here the sepoys murdered their officers and then marched upon Delhi, where the Muslims proclaimed the restoration of the Mogul empire. The revolt spread to Lucknow and to Cawnpore, where a small group of whites held out desperately for some weeks. After their surrender most of the garrison were treacherously massacred while under a safe-conduct, and 500 British women and children were done to death on the approach of Havelock's relieving force.

Outcome of the Meeting

The foresight of Sir Henry Lawrence had enabled him to prepare for the defence of the Residency at Lucknow; he himself fell during the siege. Another hero was John Nicholson, a frontier officer, who arrested the revolt in his own district, and later led the storming party at Delhi, where he was killed. Lucknow was eventually relieved by Havelock and Outram, and the mutineers were finally suppressed by Sir Colin Campbell. The mutiny was in no sense a national rebellion. It was a revolt of some of the native soldiers, and nearly all the princes stood loyal; the issue was decided in six months. The outcome was the transfer of responsibility for India from the East India Company to the Crown, consummated in 1877 by the proclamation at the Delhi Durbar of Queen Victoria as Empress of India.

The princes were guaranteed



VICTORIA, EMPRESS OF INDIA. Full imperial sovereignty over India was assumed during Lord Lytton's viceroyalty in 1877, when at a splendid Durbar held at Delhi Queen Victoria was proclaimed Empress of India. This study of the Queen Empress in her imperial robes is by Angeli.

the imperial pageantry of Queen Victoria's jubilee in 1887. But the events which crystallised this new spirit of imperialism took place in South Africa.

The Transvaal was made an independent republic in 1852. In 1877 it appeared to be on

the verge of war with a Kaffir chief. This would certainly bring upon it the powerful military confederation of the Zulus with every prospect that the Transvaal colonists would be wiped out. To prevent such a disaster, and under the mistaken impression that the Boers themselves desired union, the British commissioner in South Africa annexed the Transvaal. The aggressive attitude of the Zulus precipitated a war in 1879, which, after disasters, ended in the overthrow of the Zulu state and its annexation by the British. Delivered from that menace, the Boers repudiated the annexation of the Transvaal, resorted to arms, and defeated British troops at Majuba Hill (1881). The home government stopped the war and later in the year restored the republic by the Conventions of Pretoria.



PRESIDENT KRUGER (1825-1904). Born in Cape Colony, he trekked into the Transvaal as a boy and was president of the Transvaal Republic 1883-1900. During the Boer War he fled to Holland, and died in Switzerland.

The discovery of gold at Johannesburg in 1884-85 resulted in an influx of miners and adventurers from Europe. To that conservative Boer, Paul Kruger (1825-1904), who had become president of the Transvaal in 1883, the invasion was most distasteful. The Uitlanders (foreigners) were refused citizenship, or the

franchise within a reasonable period. They were taxpayers and objected to this ruling; moreover, they were mostly British subjects and expected that British suzerainty would protect their interests. The situation degenerated into the South African or Boer War, a struggle that lasted from 1899 to 1902.

LESSON 22

British Foreign Policy under Victoria

THE Napoleonic wars secured to Great Britain a naval supremacy which no other power attempted to challenge until the 20th century. The British conquests had been made from defensive and not offensive strategy - to counteract Napoleon's aggressive designs. The acquisition of Malta and the Ionian islands resulted from the need to close the Mediterranean as a thoroughfare for the French to Egypt and the East. These islands Britain retained (in 1864 the Ionian group was handed over to Greece).

At the close of the wars Britain alone of the Great Powers restored certain valuable conquests of territory to Holland and France, retaining Ceylon - potentially dangerous as a hostile base because nearest to India - and the Cape of Good Hope - the first link in the sea chain to India - and paying a large indemnity to the Dutch for the retention of Cape Colony. Of former French possessions, Britain retained only Mauritius, Tobago, and Santa Lucia in the West Indian area, where British expansion had been undertaken partly to defend adjacent British colonies and partly to protect British traders from the French. The loss of the American colonies was counter-balanced by the founding of the various Australian colonies

and by dominion in India, where British interests had now no serious European competition.

In relation to the other European powers. Britain had pursued, under the direction, first of Castlereagh and, after his death, of George Canning, the policy of non-intervention in the internal affairs of sovereign states, modified by Canning's insistence that armed intervention by other powers would warrant it on Britain's part - thus to some extent limiting the repressive energies of the Holy Alliance of the three autocrats of Russia, Austria, and Prussia, and helping the liberation of Spanish America from the rule of the Spanish monarchy. The Greeks were encouraged by British sympathy in their revolt against the Turk, but Russia was left to take the credit of securing Greek independence and a predominant influence at the Porte.

From this period may be dated the beginning of the century-long political duel between Britain and Russia, which resulted from the expansion of Russian power in central Asia. The tsar's frontier was gradually approaching India. British government opinion was sure that India had become Russia's objective. Domination and, much more, possession of Constantinople, with the Black Sea as a naval base, would be invaluable to the tsar in this connexion, let alone in any other; British statesmanship was directed to the preservation of the integrity of the Turkish empire and of British influence at Constantinople, in Persia, and in Afghanistan.

Career of Palmerston

From the constitutional revolution of 1832 to his death Lord Palmerston (1784-1865), commonly called "Pam," enjoyed a free hand at the Foreign Office in practically every Liberal ministry. He sympathised with liberal movements abroad, though tending to be conservative at home; his guiding principle was to make British influence actively felt in Europe and to uphold British interests in all circumstances and at all costs. A man of resolute character, he carried the Canningite "hands off" policy to its extreme limits. It was mainly his doing that



WINTER IN THE CRIMEA. During the winter of 1854-55 the troops in the Crimea suffered great hardships as a result of the severe cold and lack of proper stores and accommodation. This drawing is an "Illustrated London News" artist's impression of conditions at the front during the siege of Sebastopol.

Belgium acquired independence in 1830 (the year he became foreign secretary) and that Britain, not Russia, checked Mehmet Ali's attempted conquest of Syria and Palestine, and thus recovered prestige at Constantinople in 1840.

Palmerston's methods were high-handed, and his language in diplomacy was aggressive and sometimes infuriating to foreign powers in its British self-confidence and complacency; he treated foreign policy as his own private preserve, irrespective of his colleagues in the cabinet and even of the queen herself. Consequently he held only a subordinate position in the ministry which involved Britain in the Crimean War (1854-56). In the course of that war the ministry fell it was blamed for misconduct of the war and for the great hardships suffered by the Crimean army.

Palmerston, whose uncompromising character and views inspired public confidence, became prime minister for the first time at the age of 70, and directed the war to its successful conclusion. From the British point of view this, the only European war in which Britain took part on land between 1815 and 1914, was fought in defence of Turkey and to close the Mediterranean Sea to Russian warships in order to safeguard India. The actual cause of hostilities was a dispute concerning the authority of the Latin and Greek Orthodox Churches over the Holy Places in Jerusalem. France, under Napoleon III, supported the Latins, Nicholas I of Russia the Greeks.

European Developments

In 1840-42 Britain and China had gone to war over a trade dispute, the fighting ended in 1842 with the treaty of Nanking, the cession of Hong Kong to Britain, and the opening of certain "treaty ports" to European commerce. Another China war broke out in 1857. France was also involved; Peking was taken, and the establishment of foreign legations in the Inner City was conceded by the Chinese government.

In the various revolutionary and nationalist conflicts in Europe from



GENERAL GORDON. Charles George Gordon (1833-85) proved himself an incomparable administrator in China and the Egyptian Sudan before his tragic death in Khartum at the hands of the fanatical followers of the Mahdi, Mahomed Ahmed.

1848 onwards Britain maintained a strict neutrality in action, while openly showing sympathies, always with a strong suggestion that British non-intervention was conditional on the non-intervention of other powers and on the safeguarding of British interests. During the 20 years following the Crimean War, Great Britain was an interested spectator of the European developments which established a united Italian kingdom, separated Austria from Germany, and culminated in the Franco-Prussian War of 1870-71—a war which resulted in the foundation of what is usually called the Second Reich in Germany and of the Third French Republic. During the same period the American Republic suffered the Civil War (1861-65), which prevented it from splitting into two republics with antagonistic economic and political interests.

In that conflict, too, Queen Victoria and her government remained neutral; the alliances of Northern and Southern states each found it monstrous that Britain should not take its particular side. British sympathies were, in fact, curiously divided by the two questions at stake—the political question of the right of secession, maintained by the South,



HONG KONG IN ITS EARLY DAYS. Before 1839 the island of Hong Kong was merely a resort of Chinese fishermen, but in that year refugee English traders from Canton established themselves on its shores, and two years later the island was formally ceded to Britain by the Chinese government. Kowloon, on the mainland opposite, was ceded in 1860, and further territory was leased in 1899. This picture shows the port at about the time of its cession.

and the social or moral question of the abolition of slavery. Britain had solved her own slave problem in the West Indies in 1833, when Stanley (afterwards Earl of Derby) carried a bill for complete abolition at a cost of £20,000,000 paid to the slave-owners.

Congress of Berlin

In 1876 the Eastern Question came up again because of the persistence of Turkish misrule. Disraeli (Lord Beaconsfield) was at the head of the British government. His rival, Gladstone, roused popular sympathy for Turkey's oppressed subjects, but forcible intervention was not compatible with that "integrity of the Turkish empire" which was "Dizzy's" cardinal doctrine. The Powers could not agree. Russia invaded Turkey; in January 1878, Russian armies were at the gates of Constantinople, and the tsar imposed on Turkey the treaty of San Stefano, the terms of which were intolerable to England and to Austria. Beaconsfield made it clear that Britain was prepared to fight. For some weeks war and peace were in the balance. Russia gave way; the San Stefano treaty was revised at the Congress of Berlin, at which Beaconsfield appeared to have been the dominant personality. While the Congress was in session he concluded a separate agreement with Turkey, by which Britain was allowed to occupy Cyprus as a naval station, in return for guarantee of Turkey's Asiatic dominions other than those ceded to Russia by the treaty. Beaconsfield returned to England in triumph, but Anglo-Russian antagonisms and suspicions began to be allayed only in 1887, when a joint Russian,

British, and Afghan commission delimited the Asiatic frontiers in which they were interested.

Egypt proved a source of friction with France. Indebtedness to Britain, France, and Russia had brought Egyptian administration into the hands of a joint board of control. The imminence of revolution forced armed British intervention, France standing aside. When the revolution was suppressed in the general interest, the business of restoring order devolved upon the British, who, to the annoyance of the French, assumed a temporary protectorate. In the Sudan—nominally, but never effectively, under Egyptian sovereignty—a fanatical messiah called Mahomed Ahmed (the Mahdi) rose to power. In the attempt either to reconquer or evacuate the Sudan, General Gordon was trapped in Khartum by the Mahdists, and a long-delayed relief expeditionary force arrived only to find that the place had been stormed two days previously and Gordon killed (1885). The Sudan was abandoned until its conquest 13 years later by Kitchener.

After the fall of the Gladstone administration in 1886, foreign affairs were directed either by Lord Salisbury or the Liberal Lord Rosebery, without serious variations of principle. The general line was readiness to make unimportant concessions for the sake of agreement on fundamentals. Africa was partitioned into "spheres of influence" by the European powers. In the eastern Mediterranean the British fleet's overwhelming strength made it into something like an international police force, imposing order without arousing hostility among other Powers.

LESSON 23

The Years Before the First World War

THE Unionists, led by Lord Salisbury (1830-1903), were in power and could rely on the support of about half the Liberal party when the Boer republics, led in effect by President Kruger of the Transvaal, threw down their final challenge in October 1899 on the ultimate issue whether South Africa should remain a congeries of British colonies and Boer republics or whether it should be united under the British flag.

The Boers immediately invaded Natal, and in a few weeks British garrisons were surrounded at Ladysmith, Kimberley, and Mafeking. In attempting to relieve Ladysmith, Buller was defeated with great loss at Colenso and Spion Kop; Methuen suffered severe reverses on the banks of the Modder and at Magersfontein; Gatacre was defeated at Stormberg.

At long last the Empire awoke to the fact that the Boer communities had provided it with a very tough task. Contingents of volunteers

poured in from Canada and the self-governing colonies, and a large army under Roberts and Kitchener took the field. At length the beleaguered towns were relieved, the Boers were defeated at Paardeberg and their capitals were occupied before midsummer 1900. The Boer field armies were broken up, and the annexation of the republics was proclaimed. Nevertheless, the stubborn Boer farmers maintained a brilliant guerilla struggle for another 18 months before they were convinced that to win was impossible against the tremendous odds. So they accepted the peace of Vereeniging in May 1902 on terms of which the generosity could not be disputed or misinterpreted as in 1881. Four years later, full responsible government was restored to them.

While the war was still in progress, a general election, with the war itself as the main if not the sole issue, had been held (1900); and as on that issue the Liberal party was divided, the



AGED MAJESTY. This photograph shows Queen Victoria at the close of the 19th century. Her long reign was saddened at the end by the South African War. She died on January 22, 1901.

Unionists were returned to power with a barely reduced majority. Shortly after the war's close in 1902, Lord Salisbury retired, his nephew, A. J. Balfour (1848-1930), succeeding him as prime minister.

On January 22, 1901, before the victory was completed, in the 64th year of her reign, the longest in British history, Queen Victoria had died. Her influence had always been directed towards constitutional harmony. Her reign covered a period of great democratic development, yet no decision of im-

portance was made without her knowledge and approval. The very length of her reign had helped to popularise the monarchy, and her son, Edward VII, succeeded not only to far wider dominions than she had inherited but also to a firmly established imperial throne. Edward himself enjoyed a wide personal popularity, and to him was in large measure due the improvement in Anglo-French relations expressed in the "Entente Cordiale" of 1904, and destined to play so important a part in European history long after Edward's death.

After the Boer War

The Boer War, though it had revealed much defective army organization, had emphasised the inherent loyalty of the empire and its unity. The fact that it was no mere collection of unrelated territories, but an association of states bound together by close ties of common interests, was significantly marked by the federation of the Australian colonies as the Commonwealth of Australia on January 1, 1901, followed by the Union of South Africa in 1910. Thus, following the example set in Canada in 1867, two other groups of British colonies assumed dominion status, and a sense of national entity.

The end of the war meant immediate resumption of pre-war party politics, though the rupture between the two wings—commonly labelled pro-Boer and Imperialist—of the Liberals was not easily bridged; and for a time it was doubtful whether the leaders of the two sections would be able again to work in anything like harmony. The Irish question was in abeyance—the Irish Nationalists, too, being divided. Some success attended the Irish Land Purchase Act, 1903; but its very success caused a difficulty, as the state could not find money immediately to satisfy the claims for advances to tenants to enable them to purchase land from owners willing to sell. Then, in 1903, Joseph Chamberlain, colonial secretary in Balfour's ministry, adopted a new policy as startlingly disruptive of his party as Gladstone's conversion to home rule in 1886, or the repeal of the Corn Laws forty years earlier.

The immense development of national wealth which followed the financial reforms of Peel and Gladstone had convinced the country that free trade, in the sense of the total suppression of protective tariffs, was the only sane course for the United Kingdom to follow.

Chamberlain had become convinced that the Empire would be bound far more closely together by a system of preferential tariffs—in effect, the protection of dominion or colonial products and by a retaliation against hostile tariffs, in defiance of the doctrine universally accepted and taught in Great Britain for half a

century. His personal crusade, aided by the new imperialist sentiment, won able converts, while it antagonised a large proportion of the Unionist party whose faith in free trade remained unshaken. The result was that when a general election could no longer be deferred, the Liberals were returned to power in January 1906 with a majority of more than 80 over all other parties together. Sir Henry Campbell-Bannerman became prime minister. For the first time there was an organized, though small, Labour party of



LLOYD GEORGE (1863-1945). He was chancellor of the exchequer 1908-15 and premier 1916-22.



LEADERS IN THE TARIFF CONTROVERSY. Left, Joseph Chamberlain (1836-1914) sat in the commons first as a Radical, then as a Unionist. Colonial secretary in 1895, in 1903 he resigned to champion the cause of "Tariff Reform." On the opposite (Liberal Free Trade) side was (right) H. H. Asquith (1852-1928), chancellor of the exchequer 1905-08, prime minister 1908-16, and later created Earl of Oxford and Asquith.



TWO BRITISH KINGS IN THE 20TH CENTURY. Left: Edward VII (1841-1910). He combined a profound knowledge of the men and movements of his time with shrewd common sense and a remarkable capacity for making friends. Right: George V (1865-1936) who, during a reign beset with world-wide political tension, the disaster of the First World War, and the strain of the following years, won the heartfelt love and loyalty of his people.

Photos Stuart Russell

51 members; and of the four parties in the house, the Labour and the Irish Nationalist groups were likely in the commons to vote for the government against the Unionists. But in the Lords the opposition leaders could count on a sweeping Conservative majority. To secure the support of Unionist free-traders the Liberals pledged themselves to shelve the Irish question for the duration of that parliament.

In India, reforms were promoted by the new secretary of state, John (later Lord) Morley, with the support of the viceroy, Lord Minto, appointed before the fall of the Balfour government, which gave to Indians a greatly increased share in the responsibilities of government. These reforms were condemned in many quarters as more than rash (1909), but seditious activities and propaganda—there were assassinations in London and in India, and bombs were thrown at the viceroy in 1908—were repressed.

Asquith and Lloyd George

Campbell-Bannerman resigned through ill health (dying a fortnight later) in 1908, and was succeeded as prime minister by H. H. Asquith. With David Lloyd George, a Welshman of fierce energy and oratorical skill who was the foremost member of the Radical wing of the party, as chancellor

of the exchequer, the government pushed forward with a programme of democratic legislation strenuously opposed by the lords (it included the granting of non-contributory old age pensions of 1s. to 5s. a week to those who could prove need, 1909), and carried through Haldane's scheme of army reforms calculated to provide an efficient army—the volunteer movement being converted into a Territorial Force—but without applying the principle of compulsory service.

The real crisis came with the rejection by the peers of Lloyd George's budget of 1909. This was unprecedented and forced a dissolution. There were two issues involved: the financial, the choice between Lloyd George's proposed new methods of raising revenue (in particular taxation of land values and super-taxation of large incomes) and tariff reform, which many even of the free-traders counted less dangerous; and the curtailing of the powers of the

house of lords, an issue precipitated by the lords' rejection of the finance bill which, if allowed to become a precedent, would lay any government at the mercy of the lords, since no government can govern if prevented from raising money.

The Power of the Lords

The election of January 1910 gave the Liberals a majority of one over the Unionists; but, sure of Irish Nationalist and of Labour support, they remained in office. The budget was passed, and a Parliament Bill abolishing the power of the lords to reject a money bill sent up after passing the commons was introduced. Edward VII died on May 6, and before asking his successor George V to override the lords, if necessary, by creating enough new peers to ensure the passage of the Parliament Bill, the government decided to go again to the country. The election of December 1910 gave both Liberals and Unionists 272 seats. The Liberals went forward with the Parliament Bill.

No creation of new peers was necessary. The Parliament Act, 1911, withdrew all money bills from the power of veto by the house of lords, and made their veto on other bills suspensory



SIR EDWARD GREY (1862-1933), created viscount in 1916, was a pacifist and, as foreign secretary, strove passionately to avert war in 1914. Later he did much to preserve the solidarity of the Allies.

Photo, Russell

only—that is, a bill passed in three successive sessions by the commons would be submitted for the royal assent and become law whether passed by the lords or not ; but two years had to elapse before its final acceptance by the commons. The act made no change in the composition of the house of lords.

In the same year, 1911, the government established national health insurance and dis-established the Anglican Church in Wales. In 1912 it introduced a bill, passed in 1914, to recreate an Irish parliament in Dublin. This measure was accepted by the Irish Nationalists ; but Ulster, led by Sir Edward Carson (1854–1935), declared itself ready to resist by arms inclusion in such a scheme. Both sides were drilling forces when a far worse disaster put a stop, for the time-being, to their braggadocio.

On June 28, 1914, the Archduke Francis Ferdinand, heir presumptive to the dual throne of Austria-Hungary, was assassinated at Sarajevo in Bosnia (then within Austria-Hungary) by a Serbian named Princip. Austria, with German backing, presented an ultimatum to Serbia, to whose support came Russia. The British government offered mediation. But convinced that Great Britain would do nothing, Germany on August 1 declared war on Russia, and next day on Russia's ally France. On August 3 she invaded Belgium, in defiance of the treaty of 1839 which guaranteed perpetual Belgian neutrality (carefully observed by Bismarck in 1870). On August 4, 1914, Britain declared war on Germany. The Unionists, led by Bonar Law (1858–1923), promised full support to Asquith's Liberal government.

LESSON 24

Britain's Part in the First World War

WHEN Great Britain declared war against Germany on August 4, 1914, the government was supported by the country and, as was very soon apparent, by the Empire. The British volunteer army was desperately small in comparison with the compulsorily recruited armies of the Continental powers ; but it was highly efficient. In the third week of the war, all of it except the necessary reserves had taken station beside the French and Belgians on the Belgian borders. The country was already dotted with the camps to which volunteers, the "First Hundred Thousand" of "Kitchener's Army" were pouring in for training. The Dominions were equally prompt in their response to the call to arms. Thanks to the foresight of the first lord of the admiralty, Winston Churchill (born 1874), the British fleet was actually posted at the moment when war was declared, so that no enemy squadron was able at any time to slip through it.

Naval Actions

Great Britain had begun by discharging a sea-power's first function in war, the securing of naval supremacy. The only German squadron still on the high seas did indeed succeed in engaging and sinking a weaker British squadron under Cradock at Coronel, in the Pacific, on November 1 ; but only to be itself trapped

and sunk by Sturdee's larger squadron at the Falkland Islands five weeks later. The remaining German cruisers that were still at sea were soon hunted down, while the German grand fleet lay in ports sheltered by minefields, whence only an occasional squadron issued, hastily raided the English coast, and raced back to cover.

Battle of Jutland

Not until May 1916 did the German navy sally out in force, to come into touch in the North Sea with a detachment of the British fleet commanded by Admiral Beatty. The main body of the British fleet, under Admiral Jellicoe, came up ; but neither Jellicoe nor von Scheer, the German commander, dared risk the ultimate issue, and the two fleets drew apart, the Germans retreating to the cover of their minefields. In this indecisive action, fought on May 31, the British lost 14 ships and suffered 7,000 casualties, the Germans 11 ships with 3,000 casualties. The Germans, indeed, claimed a tactical victory ; but they never again challenged a fleet engagement. Instead they confined themselves to intensified submarine warfare, chiefly against non-combatant ships, a ruthless campaign that decreased only after St. George's Day, 1918, when a British squadron under Vice-Admiral Roger Keyes (1872–1945) succeeded in sealing up for the rest of the war their submarine base at Zeebrugge in Belgium.

In the first stage of the war on land the British expeditionary force of 80,000 men under Sir John French, the "contemptible little army" (as the German Kaiser is supposed to have described it), was posted on the French left, and enabled the Allied line, hinging on



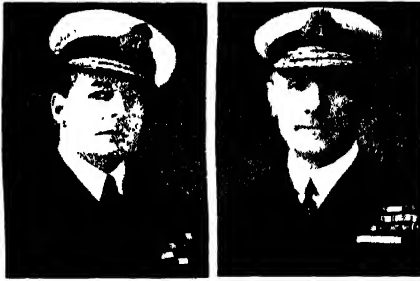
KITCHENER.
Field-marshal, secretary of state for war
1914-16.

Longwy and Verdun, to swing back before the German onrush, always covering Paris, without being broken or outflanked. The retreat from Mons before very much stronger forces forms one of the most notable episodes in British military history. The British force performed its part no less honourably when the Germans were falling back and the two lines were establishing trench warfare in what became the permanent Western Front from Switzerland to the sea, notably in securing and holding the famous Ypres Salient against massed attacks.

Gallipoli

In 1915 the British attempted to draw off Turkish pressure on Russia in the Caucasus by an attack on the Dardanelles. From February 19 to March 18 warships bombarded forts along the shore and tried to force a passage through the strait; opposition was comparatively light. A month later some 90,000 British, Australian, New Zealand, and French forces commanded by Sir Ian Hamilton landed, under heavy fire, on Gallipoli peninsula. Although they were short of artillery, ammunition, and water, they slowly extended their ground against the now well-entrenched Turks. Casualties were heavy, and July saw the Allies brought to a standstill. Reinforcements which arrived in August vainly attempted to take the Turkish lines by a flank attack.

Hamilton was relieved of his command in October, and on December 8 the British government ordered the evacuation of Gallipoli, an



Left : Admiral Beatty, who was appointed to command the Grand Fleet in November 1916.

Right : Admiral Sir John Jellicoe, who commanded the Grand Fleet from 1914 to 1916.

Below : Jellicoe's battle-ships steaming through the North Sea to engage in the battle of Jutland.



operation carried out between December 20, 1915, and January 9, 1916. The campaign, an imaginative one, owed its inspiration to Winston Churchill. Had it succeeded, it might well have hastened the end of the war; but the value of the surprise caused by the initial onslaught was lost in the delay before reinforcements, on too small a scale, were sent out.

Allied Invasions

Allied contingents, British included, had in October 1915 occupied Salomea in Greece, and made it an Allied base, despite Greek neutrality. In the same year the British were repelling

Turkish attacks on the frontier of Egypt, which was proclaimed a British protectorate, and were themselves invading Mesopotamia from India. The expedition, commanded by General Charles Townshend (1861-1924), advanced almost to Baghdad, but early in December 1915 had to fall back to Kut-el-Amara, in a U-shaped bend of the Tigris, which was turned into a trap by floods that cut off alike retreat and the arrival of supports, so that Townshend was forced to surrender, April 29, 1916. But the campaign was only in abeyance; before twelve months were past Kut was in British possession again, Baghdad was occupied, and from that time the



A SQUADRON OF BRISTOL FIGHTERS returning to their aerodrome in France after a successful raid across the German lines.



GASSED. In this picture by John S. Sargent, British soldiers on the Western Front blinded by German mustard gas during the fighting of August 1918 are being led by a hospital orderly down the rough plank road between Doullens and Arras to the dressing-station at Le Buc-du-Sud.

Photo, Imperial War Museum

progress, though slow, was continuous. In 1917 an advance on Palestine from Egypt was held up at Gaza ; later in the year Allenby, by turning the flank of Gaza, was able to occupy Jerusalem before Christmas, just as the great crisis of the war was impending.

First Use of Poison Gas

On the Western Front, for four years the British fought side by side with the French and in concert with them though not under a single command until unity was established in March 1918, under Marshal Foch (1851-1929), with the co-operation of Field-Marshal Sir Douglas Haig, the British commander-in-chief. In 1915 the Allies and the Germans were fighting each other all along the line, with only occasional special concentration on particular points, as by the British at Neuve Chapelle in March, and at Loos six months later both attempts at a break-through which were foiled and the German onslaught at Ypres in April, where a gap was actually created by the first use of poison gas, but was reoccupied by the Canadians before the Germans could make good the advantage they had won.

First Tanks in Action

After the failure of the German thrust at Verdun in the first half of 1916, the Allies began a concerted push all along the line—a break-through being no longer regarded as practicable intended to force the enemy back by sheer pressure, which, as concerns the British part in it, called the First Battle of the Somme, began on July 1, 1916. Ground was gained, but only a strip and only

by desperate fighting. After the long preliminary bombardment, the creeping barrage was used here for the first time on a big scale, the infantry advancing behind a progressing screen of bursting shells. On September 15, 1916, tanks, invented and used by the British, first went into action. Weather conditions made real progress impossible during the winter, but in the spring of 1917 the struggle was renewed. Its most notable events were the capture of the Vimy ridge in April and of the Messines ridge, half of which was blown up, in June ; after which, weather conditions again made the farther advance through the Flanders mud to Passchendaele disastrously costly.

Two vital changes in the situation were the declaration of war on Germany by the United States of America in April 1917 ; and the double Revolution, May and November (October old style), which took Russia out of the war in March 1918 (Treaty of Brest-Litovsk between Russia and Germany).

In March 1918 the Germans launched against the British right an attack planned to smash through the Allied line and ensure victory before the American armies were ready to take the field.

This offensive sent the line back, often so broken that if the impetus of the thrust could have been maintained it must have been pierced ; but the impetus was never quite sufficient. In front of Amiens the attack was halted. This was followed by an attack on the British left, which was also held up, though the line was driven in, in a deep curve. Reinforcements were now pouring in, and the next German concentration was directed against the French,



Left : Field-marshal Sir John French, who led the British Army in France from August 1914 to December 1915. Right : Sir Douglas Haig, who succeeded French as commander-in-chief

not the British. By mid-July that attack was shattered

Foch Turns the Tide

Before the end of the month Foch opened his great offensive, and the German retirement began. It was a renovated British army that took up its allotted share in the decisive campaign when its right advanced on August 8, in conformity with the preceding movement on the French left, the successive sections of the line coming into action at the planned intervals, battering the enemy back over the old battle-fields the advance never pausing—into then reserve trenches, until in mid-September the Canadians carried the Hindenburg Line itself.

While the state of affairs on the Western Front was being so dramatically reversed, General Allenby (1861-1936), having captured Jerusalem

on December 11, 1917, achieved, by a surprise attack, a brilliant victory at Megiddo (September 19, 1918) and cleared the Turks out of Palestine; on October 1 he was in Damascus. During the next month the Turkish army on the Tigris surrendered and an armistice was signed on October 30, giving the Allies possession of the Dardanelles and the Bosphorus.

Armistice, and Complete Surrender

On the Italian front Italians and British opened an attack on October 23; on October 27 the Austrians were in flight. On November 3 they signed an armistice. The Germans were standing alone and on the brink of crashing. Early in November there were revolutionary outbreaks and the Emperor William II fled, to die, still in exile, in 1941. On November 11, 1918, German Republican delegates signed their country's complete surrender.

LESSON 25

Britain Between the Wars

THE close of the First World War saw Britain enjoying a measure of power and prestige such as had not been hers since Waterloo. Under the leadership of Lloyd George, who had headed a Coalition government from 1916, with remarkable energy, resource, and resilience, she had brought victory out of defeat and now looked confidently to the building of a new Britain in a world freed from the menace of militarism—a land, as the premier phrased it, made fit for heroes.

Seeking a free hand in the making of the peace, the premier "went to the country" in December 1918 at the head of a great array of candidates, Conservative and Liberal, who had accepted the Coalition "coupon." Against them were the Independent Liberals under Asquith, and the Labour party, led by Arthur Henderson (1863-1935). The result of the election was a foregone conclusion. Asquith and most of the Liberal and Labour critics of the later war period, including Philip Snowden (1864-1937) and Ramsay MacDonald, lost their seats; and in the new parliament 474 Coalition members were faced by 59 Labour members, 27 "Wee Free" Liberals (led by Sir Donald Maclean), increased to 28 by Asquith's return to the house as M.P. for Paisley in 1919; and a handful of anti-Lloyd George Conservatives. The Irish members elected to this parliament never took their seats.

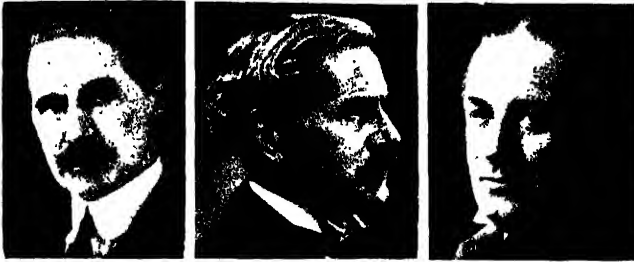
Treaty of Versailles

Backed by this tremendous majority, Lloyd George set about the task of peace-making and reconstruction. With Clemenceau (1841-1929),

the French prime minister, and Woodrow Wilson (1856-1924), president of the U.S.A., he formed one of the Allied triumvirate under whose aegis was at length produced the Treaty of Versailles, signed on June 28, 1919. Under this treaty, Britain acquired no territory, but in due course was rewarded by having entrusted to her by that new creation, the League of Nations, huge and valuable "mandated" territories, i.e. territories held in trust for the League, for whose good government she could be called in question at Geneva. In this way Palestine (part of which later became the Kingdom of Jordan), Iraq (Mesopotamia), and, in Africa, Tanganyika and part of Togo and of the Cameroons became attached to the Empire, though not formally incorporated within it; and at the same time and in similar fashion the Union of South Africa was made responsible for German South-West Africa; Australia for certain Pacific islands; and New Zealand for Samoa.

Industrial Unrest

While the peace-makers were busy in Paris, at home the work of demobilisation proceeded rapidly. During 1919 millions of men returned to civil life and were either absorbed in industry or received the new unemployment "dole." There was a strike on the railways, and unrest in the coalfields prompted the setting up of the Sankey Commission; but on the whole the change-over to peace-time conditions was made with little friction. Trade was booming; and a beginning had already been made with reconstruction in the shape of a new Education Act and a Representation of the People Act,



FAMOUS BRITISH PREMIERS. Left: Andrew Bonar Law (1853-1923), who entered parliament in 1900 and from 1911 was leader of the Unionist party. He became prime minister in October 1922, but resigned in May 1923, through ill health. He was succeeded by (right) Stanley Baldwin (1867-1947), who had been his chancellor of the exchequer. Centre: James Ramsay MacDonald (1866-1937), Socialist leader, after the general election of 1923 formed Britain's first Labour government. This fell in 1924 and Baldwin became premier for the second time.

February 1918, which gave the vote to youths of 18 who were serving with the forces, and to women over 30.

But in October 1920 there was a 12-day national strike of coal-miners for higher wages, and by Christmas there were nearly 750,000 men on the books of the labour exchanges as unemployed. The end of the post-war boom came definitely during 1921. There was a three months' coal stoppage, mass unemployment increased, wages fell rapidly, and there was a widespread demand for economy in public administration and a reduction in taxation and government expenditure. In the political sphere the Coalition was rapidly losing its popularity, and the sudden *volte face* whereby, after years of resistance to Irish claims, the government opened negotiations with the Sinn Féin leaders and in 1922 conceded to Arthur Griffith (1872-1922) and Michael Collins (1890-1922) more than Parnell or Redmond had ever dared to ask, did little to rehabilitate it in public opinion. The threat of a war with renascent Turkey proved the last straw. Most of the Conservative members of the Coalition rebelled under Bonar Law and Stanley Baldwin, and in October 1922 Lloyd George tendered his resignation. Bonar Law was his successor, and in the ensuing general election the Conservatives won 344 seats; the Labour party 143; Independent Liberals 60; National Liberals 57.

First Labour Government

In the spring of the next year Bonar Law, a dying man, resigned and was succeeded by Baldwin, who in December asked the electorate to endorse his proposals for imperial preference. But the townsfolk were still fearful of a dear loaf; and the general election resulted in the return of only 258 Conservatives, as against 191 Labour and 158 Liberals of the Lloyd George and Asquith factions. In January 1924, a vote of confidence being denied him,

Baldwin resigned and a Labour government—the first in British history—took office with Liberal support; it was led by Ramsay MacDonald, who during the war had been execrated as a pacifist. His government had some conspicuous successes in European diplomacy, but fell within eight months, and the general election of 1924 resulted in the return of an overwhelmingly Conservative house of commons—415 Conservatives, 152 Labour, and 42 Liberals. Baldwin became prime minister for the second time, with Winston Churchill as chancellor of the exchequer and Austen Chamberlain (1863-1937), elder son of Joseph,

at the Foreign Office.

Baldwin's Second Ministry

Four events of great importance marked Baldwin's second term of office as prime minister: the return to the gold standard on April 29, 1925—with disastrous effects on British overseas trade, owing to the over-valuation of the pound in terms of the dollar and franc; the Pact of Locarno, 1925, between Britain, France, Germany, Belgium, and Italy, mutually guaranteeing the frontiers of western Europe; and the granting of the franchise to women on the same terms as men, 1928.

The fourth was the general strike, May 4-12, 1926, of workers on the railways and road transport, in iron and steel, printing and building, in support of the miners who had been "locked out" on their refusal to accept a reduction in their wage rates. The government met the situation with energy, and after little more than a week the general strike, which had never assumed a revolutionary aspect, was called off by the general council of the Trades Union Congress; the miners remained "out" until the following December.

The strike had serious effects on British industry and commerce; but business was once again on the up-grade when in 1930 the economic blizzard that had started in the U.S.A. the year before reached Britain. A second Labour government had taken office under Ramsay MacDonald in 1929 (the general election figures were Labour 287, Conservative 261, Liberal 59), but the fall in British exports and reduction of income from overseas investments and shipping and financial services, combined with the cost of maintaining the vast and ever-growing number of unemployed, affected the national finances to such an extent that it was found impossible to embark on any policy of industrial reorganisation. In the summer of 1931 people at home, and more particularly

abroad, began to be alarmed at Britain's mounting adverse trade balance and her unbalanced budget. There was a "run on the pound" In a last effort to keep on the gold standard the government borrowed gold from Paris and New York, but the situation grew worse

A National Government

On August 23 the Labour government broke up; a majority of the cabinet refused to agree to the drastic economies in allowances to the unemployed, wages of teachers, civil servants, old age pensioners, etc., that were put forward by MacDonald and by Snowden, the chancellor of the exchequer, as being necessary to balance the budget. MacDonald, the next day, was asked by the king to form a National government and though the bulk of the Labour members refused to join the new coalition, he at once formed a cabinet composed of 4 Labour, 2 Liberal, and 4 Conservative ministers. The new government immediately proceeded to balance the budget by drastic economies and increased taxation. These being insufficient to meet the situation, the gold standard was suspended on September 21.

Then in October parliament was dissolved, and MacDonald asked the electors to give him a "doctor's mandate" to restore national prosperity by any and every means in the government's power. The result of the appeal was an emphatic vote of confidence. 553 supporters of the National government were returned, opposed by 52 Socialists and 7 Independents. In February 1932 a 10 per cent. tariff was imposed on nearly all goods imported from foreign countries; in succeeding months further duties were imposed and those in existence increased.

In the summer of 1932 an imperial economic conference was held at Ottawa, with a view to the better development of Empire trade. At the final session on August 20 agreements were signed on behalf of the mother country and the dominions whereby, in return for certain preferences granted to British goods, Britain for her part agreed to impose duties on foreign wheat and other

foodstuffs, with preferences for dominion produce, and to institute a quota system for bacon, beef, and mutton. Faced with so complete an abandonment of free trade principles, Snowden (now Lord Snowden) and the Liberal ministers, Sir Herbert Samuel and Sir Archibald Sinclair, resigned from the cabinet.

A disarmament conference opened at Geneva in February 1932. After discussing the limitation of capital ships and the abolition of submarines, gas and chemical warfare, bombing aircraft, and guns over a certain calibre, the conference broke down, chiefly over Germany's insistence on equality as regards armament as well as disarmament and Britain's insistence upon the retention of air bombing as a police measure on the fringes of the Empire.

Failure of the League of Nations

In the Far East, meanwhile, Japan had in 1931 occupied the whole of Manchuria and subsequently created there the puppet state of Manchukuo. The League of Nations proved powerless to stop her. In 1934 Germany withdrew from the League, which failed ignominiously in its attempt, by economic pressure, to stop Italy's conquest and occupation of Abyssinia, 1935-36.

Early in 1935 a radical change in British armament policy was announced: in face of the increasingly unsettled state of Europe, the government had resolved to embark upon a policy of rearmament.

With considerable achievements at home in the matter of houses built and unemployment reduced, the National government (in which in June 1935 Baldwin and MacDonald had exchanged the posts of lord president of the council and prime minister) appealed to the country for a further endorsement of its policies. The general election held on November 14 returned 425 National government supporters, 154 Labour members.



GEORGE VI (1895-1952). He succeeded to the throne on the abdication of his elder brother, Edward VIII, in 1936 and was crowned in May 1937. In 1923 he married Lady Elizabeth Bowes-Lyon, daughter of the Earl of Strathmore. Their Majesties endeared themselves to all by their personal qualities and by their indefatigable interest in the welfare of their subjects.

Vast Changes

The years between the World Wars saw vast changes in imperial relationships. Egypt was conceded independence in 1922; Southern Ireland was given dominion status as the Irish

Free State, also in 1922; the eastern part of the area mandated to Britain as Palestine was detached in 1923 to form the separate country of Transjordan (later re-named Jordan), and in the western part, in accordance with a declaration made by Balfour in 1917, some thousands of Jewish immigrants were re-settled in their ancient home. Iraq was declared free from mandatory control in 1932.

Developments in the Empire

The Imperial Conference of 1926 passed an epoch-making resolution defining the relationship between the individual states comprising the British Empire. Great Britain and the self-governing dominions were declared to be "autonomous communities within the British Empire, equal in status, in no way subordinate one to another in any aspect of their domestic or external affairs, though united by a common allegiance to the Crown, and freely associated as members of the British Commonwealth of Nations." This declaration was given statutory effect by the Statute of Westminster, passed by the Imperial parliament in London in 1931.

A commission under the chairmanship of Sir John (later Lord) Simon (1873-1954) was appointed in 1927 to consider the possibility of instituting responsible government in India. Its report, made in 1930, formed the basis for discussion at round-table conferences with Indian leaders held in London in 1930 and 1931. A draft constitution was drawn up, accepted by the Imperial parliament in 1935, and put into force in 1937. It provided for the federation of the British provinces in each of which responsible government was set up, and the princely states. In several of the provinces the new system was accepted and worked by Indian politicians; in others its aims were frustrated. The situation was far from settled when Hitler's invasion of Poland in 1939 caused all such matters to be shelved for the time being.

The Irish Free State in 1937 declared itself a republic, sovereign and independent, though the credentials of Ireland's representatives abroad still bore the king's endorsement.

On January 20, 1936, King George V died and was succeeded by his eldest son as Edward VIII. While Prince of Wales the new king had won wide popularity, which he seemed likely to

retain as king. But his desire to marry Mrs. Wallis Simpson, an American who had already been once divorced and had taken a second husband, was so strongly opposed by the government that, rather than give up his intended marriage, the king abdicated on December 11, 1936. He was created Duke of Windsor, and in 1940 was appointed Governor of the Bahamas, a post he held until 1947. His brother the Duke of York was on December 12 proclaimed king as George VI. The new king began his reign in a steadily worsening international situation.

Chamberlain's Policy of Appeasement

Baldwin was created an earl in May 1937, and was succeeded as prime minister by Neville Chamberlain (1869-1940), younger son of Joseph. In the face of strong opposition from his own as well as from the Labour party, Chamberlain adopted and maintained a policy aimed at appeasing Hitler, dictator of Germany since 1933. The climax came when, following Hitler's threats to dismember Czechoslovakia, Chamberlain, believing war to be all but inevitable, made three dramatic flights to Germany to meet Hitler. Aided by Daladier, the French premier, and Mussolini, dictator of Italy, Chamberlain forced the Czechs to accept dismemberment, in return for which he was able to return to London on September 30 with an Anglo-German no-more-war agreement signed at Munich. His apparent success in warding off imminent war won him immense personal popularity in Britain, but the Munich agreement merely convinced Hitler and Mussolini that nothing would move Britain to fight. But as German aggression continued, British rearmament was hurried on, and in April 1939 parliament took the unprecedented step of introducing compulsory military service in peace-time. The international situation rapidly deteriorated. When it looked as though Poland would be Hitler's next victim, Britain and France entered in April into a pact with her, promising military assistance if she were attacked. Hitler invaded Poland on September 1; Britain sent an ultimatum to Germany. It was ignored, and at 11 a.m. on September 3 Britain, again in alliance with France, was at war with Germany.

LESSON 26

Britain in the Second World War

IT was already clear at the time of the Munich crisis that a second European war would impinge on the day-to-day lives of the citizens of Great Britain much more intimately than had the First World War. In September 1938 gas masks had been handed out (possibly

the main reason that no gas attack from the air was ever made on British cities); air raid shelter trenches were dug in the public parks of big towns; and thousands of children were moved out of towns to areas in the country considered less likely to be attacked from the air.



WHEN INVASION SEEMED IMMINENT. Just before the Second World War broke out in 1939, and again in June 1940, when invasion appeared imminent, children were evacuated from large cities to safety areas. In this photograph a party of youngsters entering a London station to entrain for the country pass a detachment of troops drafted into the metropolis. Similar scenes of evacuation were enacted at Southampton, Hull, and other centres.

Immediately Germany invaded Poland in 1939 a mass migration of children (the youngest accompanied by their mothers) was carried out from centres of population to the countryside during September 1-3. A "black-out" (that is, the close curtaining of all windows at night so that no ray of light could escape, and the lowering or extinction of public lighting) was rigorously enforced. Air raid shelters were improvised in trenches and in the basements of houses, shops, and other premises. An order was issued that gas masks must be carried always and everywhere.

Ill-prepared to Fight

Chamberlain invited the Labour and Liberal leaders to enter a Coalition cabinet. They refused. But into the war cabinet of nine which he set up he brought Winston Churchill, after years in the political wilderness, as first lord of the admiralty (the office he held at the outbreak of the First World War), and Anthony Eden (born 1897), who had resigned in 1938 in protest against Chamberlain's policy of appease-

ment, as secretary for the dominions. Although Britain had been rearming since 1935, and with additional assiduity since Munich, she was ill-prepared to fight the war she had declared. But within five weeks a British Expeditionary Force of 158,000 men was landed in France and took up its position on the left of the French.

Hitler's Invasions

Poland, invaded from the west by Germany, from the east without any ultimatum or declaration of war by Russia, was conquered in a week, and divided between her conquerors. During the next seven months Germany made no fresh move on land. The French lay quietly in the Maginot Line, the Germans in the Siegfried Line. The Royal Navy maintained a blockade of the Continent; German warships were out on the high seas attacking British merchant shipping. One of the German ships, the *Admiral Graf Spee*, driven to take refuge, and bottled up in the estuary of the River Plate

by the British cruisers *Exeter*, *Achilles* (of the Royal New Zealand Navy), and *Ajax*, scuttled herself on Hitler's orders on December 17, 1939, rather than come out to face the cruisers, now reinforced by other Allied ships; her commander, Captain Hans Langsdorff, was found dead by his own hand in the naval arsenal at Buenos Aires on December 29.

Hitler moved swiftly again on April 9, 1940. He invaded neutral Denmark, overrun without the firing of a shot, and landed troops in neutral Norway. A small British expedition hurriedly despatched to help the Norwegians (who had refused military assistance earlier) had to be withdrawn in a few weeks before superior German forces. These new rapid German



LEADER OF AN EMPIRE. "I have nothing to offer but blood, toil, tears and sweat," Mr. Churchill told his newly-formed government in May 1940, and the nation, as well as parliament, followed him with enthusiasm and trust.

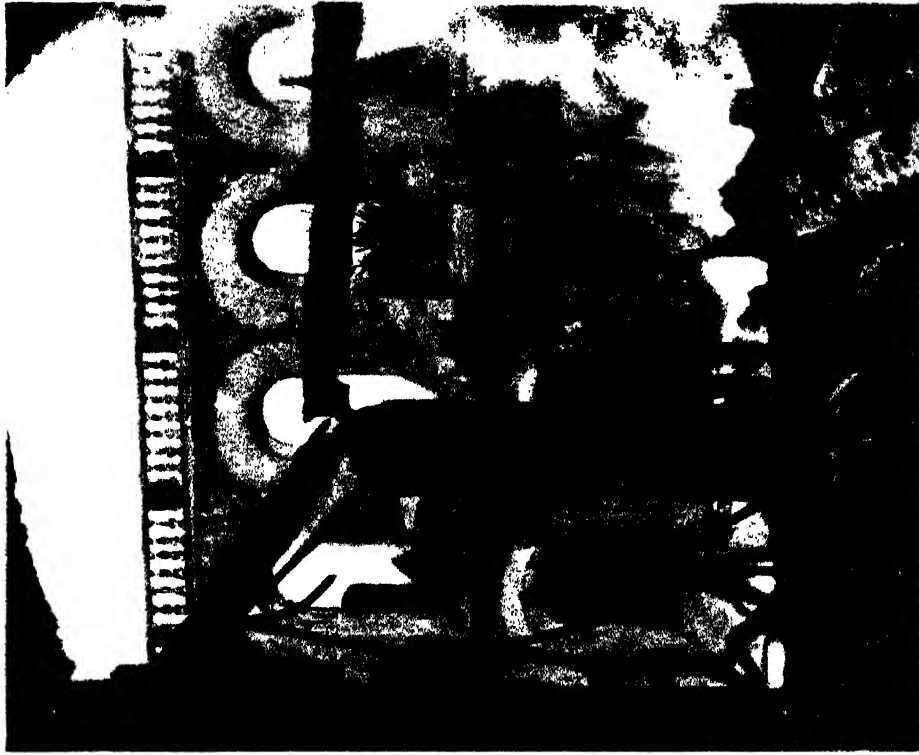
Photo, Walter Stoneham



DUNKIRK, 1940

By Charles E. Connor R 4 Inspired by a Museum photograph Copyright reserved

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LONDON'S ORDEAL BY BOMB AND FIRE IN THE SECOND WORLD WAR

During a big bombing raid on London in May, 1941, an area around St. Paul's Cathedral, Fleet Street, was almost totally destroyed. In the painting on the left, shown in an exhibition of paintings by firemen artists at the Royal Academy in the autumn of that year, Leonard Rosoman depicts what he saw. "A wall crashed down on two of his colleagues, killing both." The painting on the right, "Smouldering Ruins of St. Andrew's, Holborn," is by another fireman artist, Bernard Hallstone.

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A MIRACLE OF DELIVERANCE. The withdrawal of British and Allied troops from the open beaches of Dunkirk was the greatest feat of its kind in the history of warfare. By day and night, from May 26 to June 3, 1940, naval vessels, pleasure steamers, private yachts, craft of every description, raced to and fro across the Channel and saved some 337,000 men from death or captivity. In this photograph hundreds of troops are lined up on the perilous beach, awaiting the ships that will take them to English shores—presently to return to France and fight again, and conquer.

conquests led to bitter criticism in the house of commons of Chamberlain's leadership. On a motion of censure Chamberlain secured a majority of only 81— in the same house that in 1935 had given him a majority of 271 over his Labour opponents ; some 40 of his own party had voted with the opposition, many others had abstained. On May 10 Chamberlain resigned, recommending Winston Churchill to King George VI as his successor.

On the very day of this change Hitler struck again : he invaded Luxemburg, Belgium, and the Netherlands—all of which countries had meticulously maintained their neutrality even after the Norwegian disaster— and swept into France through Belgian territory, thus outflanking the 250-mile long Maginot Line, constructed at vast expense, on which France had relied for defence so completely that its guns could not be fired except towards Germany.

Dunkirk Evacuation

Churchill had no difficulty in forming an all-party cabinet. When he met the house on Whit Monday, May 13, he said, " I have nothing to offer but blood, toil, tears and sweat . . . You ask what is our policy ? I will say : It is to wage war by sea, land, and air with all our might . . . You ask, what is our aim ? I can answer in one word : Victory. . . ."

The situation in France deteriorated rapidly. The swift German advance drove a wedge between the British, together with part of the

French forces, and the main French army. It looked as though the whole of the forces isolated in the west must be lost. But between May 26 and June 3, in what Churchill called a " miracle of deliverance," 224,585 British and 112,546 Allied (chiefly French) troops were brought off from the open beaches of Dunkirk by an armada of small boats of any and every kind collected from every port in Britain— a feat made possible by the exceptional calmness of the sea. During the days of a brilliant June, the news from France grew worse. In an attempt to give the French the moral stamina to continue the struggle, Churchill on June 16 proposed a political union of France and Great Britain ; but no knowledge of this offer ever reached the French people.

Pétain's Armistice with Germany

On June 21 Marshal Pétain, leader of a new French government, signed an armistice with Germany at Compiègne in the same railway coach in which Germany had signed the armistice of November 11, 1918 (the coach was then taken to Berlin, where it was destroyed in a British air raid on that city). Italy, anticipating a speedy end to the war in German triumph, declared war on France and Britain on June 10, and advanced along the Riviera. The R.A.F. was out over Libya next day, and on June 12 made the first British attack on Tobruk.

It was with a certain sense of relief that the British people found themselves alone in their



"COVENTRATED." When 400 German bombers made a moonlight raid on Coventry on the night of November 14-15, 1940, they reduced the 14th-century cathedral to a mere shell. The bombardment lasted for 11 hours.

islands facing the enemy. No one outside the British Isles thought it would be long before they too went down before Germany's might. King Haakon and the Norwegian government, Queen Wilhelmina and the Dutch government, the Belgian government (King Leopold III had elected to stay in Belgium), the Polish government, and General de Gaulle, leader of the Free

French, all established in England as directors of resistance after the overthrow of their own countries, shared Britain's tempered optimism.

The Battle of Britain

The first German bombs to fall on the mainland of Great Britain exploded on Canterbury on May 9, 1940. Air attack on industry began with a raid on Middlesbrough on May 24, and steadily increased. On July 10 started the air battle called the Battle of Britain; it lasted until October 31; in the course of it, according to German records, the R.A.F. destroyed 1,733 German aircraft and damaged another 643. It began with attacks on shipping in the English Channel, switched to forward aerodromes in the south of England, then to industrial towns and docks, and in the end to the capital. A daylight raid on the London docks in the afternoon of September 7, 1940, lighted fires which served as a beacon to night raiders coming over in waves from 8.10 p.m. until 4.30 a.m. From September 7 until November 2 the capital endured an attack every night. Thereafter raids on London were less continuous though some, nevertheless, were heavy; the greatest weight of bombs dropped on London in any one night (450 tons) was delivered on May 10, 1941.

Perhaps the most memorable raid on Britain was that on Coventry by full moonlight on the night of November 14-15, 1940, when some 400 bombers coming in in relays kept up their bombardment for 11 hours: 1,200 high explosive bombs, 30,000 incendiary bombs, and 50 parachute mines were dropped on this town. Bragging of this feat afterwards, Josef Goebbels (1897-1945), the German minister of propaganda, coined the word *coventrierten*, to "coventrate." A very sizable port and industrial



SUPREME COMMAND. Members of the Supreme Command, Allied Expeditionary Force, at their headquarters in February 1944. Left to right: Lieut.-Gen. Omar Bradley, Senior Commander, American ground forces; Admiral Sir Bertram Ramsay, Allied Naval Commander; Air Chief Marshal Sir Arthur Tedder, Deputy Supreme Commander; General Dwight D. Eisenhower, Supreme Commander; Gen. Sir Bernard Montgomery, C.-in-C., British group of armies; Air Chief Marshal Sir Trafford Leigh-Mallory, Air C.-in-C.; and Lieut.-Gen. W. Bedell Smith, Chief of Staff.

Photo, "The Times"

town in Great Britain was badly damaged in air raids, and many purely residential towns, for example, Bexhill, Bournemouth, and Brighton, suffered attack, as did also some villages and even farmsteads.

The Air Attack Fails

During this period Germany and Italy had no doubt that the end was in sight ; and well-wishers and ill-wishers alike in the United States of America expected the United Kingdom to go down before the onslaught. But the German air attack on Great Britain failed, for the Luftwaffe had been built up to work with the German army, and thanks to the 20-mile "ditch" separating England from occupied France and to the vigilance of the Royal Navy, the German army was unable to follow its air force to Great Britain.

While Germany was attacking Britain by air, Italy struck at the British in British Somaliland on August 4 (evacuated on August 19) and in Egypt on September 13. In October, Italy invaded Greece. In the Balkans and in Africa Italy found herself in retreat : British forces in Egypt swept the Italians back into Libya and on January 22, 1941, took Tobruk. Then Germany went to Italy's aid, and during March and April 1941 conquered Yugoslavia and Greece, driving out of the Balkans and then out of Crete the hastily improvised force of British, New Zealanders, and Australians rushed to the help of Greece at the expense of the British forces in Libya, which were in consequence compelled to retreat to Sollum, Egypt (reached April 11), leaving an Imperial force besieged in Tobruk.

Loss of H.M.S. Hood

Other British forces, including South Africans, had meanwhile re-taken British and occupied Italian Somaliland, February-March 1941 ; occupied Eritrea during April ; captured Addis Ababa, capital of Abyssinia, April 5, and thus destroyed Italy's East African empire. The navy in the Mediterranean had on March 28 won the Battle of Cape Matapan over the Italian fleet in the only battle in which it was brought to action during the whole war. In the Atlantic occurred on May 24 one of the worst naval disasters of the war ; the loss of *H.M.S. Hood*, 46,300-ton battle cruiser, sunk by a direct hit on her magazine from the 13-mile distant *Bismarck*. Fewer than a dozen of the *Hood's* complement of 1,418 were saved. The *Bismarck* herself a ship of 45,000-tons displacement, was sunk on May 27 after a five-day chase.

On June 22, 1941, with no declaration of war, Germany crossed the Russo-German border in occupied Poland. Most of the German bombers were drawn off from western Europe to the new front, and air attack against the United Kingdom was never again so heavy as during the

Battle of Britain and the following few months.

The change wrought in the U.S.A.'s attitude by Britain's successful stand against the Luftwaffe was demonstrated by the passage of the measure commonly called the Lease-Lend Act. During the first year of the war Britain had had to realize much of her overseas investments in order to pay for arms and other stores from the U.S.A. which, under her Neutrality Act of November 4, 1939, could export arms only if paid for in cash and carried in non-American ships. By the end of 1940 Britain's dollar credit was almost exhausted. President Franklin D. Roosevelt (1882-1945) announced his "lease and lend" plan to aid Britain at a press conference held on December 18, 1940. On March 11, 1941, congress passed an act under which the president was empowered to "sell, transfer, exchange, lease, lend, or otherwise dispose of any defence article" to the government of any country "whose defence the president deems vital to the defence of the United States."

Mutual Lease-Lend Assistance

Under this act Great Britain (and, after the U.S.A. was brought into the war by the Japanese attack on Pearl Harbour on December 7, 1941, the other Allies, including Russia) received arms and equipment of all kinds, food, and raw materials. An agreement entered into by Great Britain and the U.S.A. on February 23, 1942, provided for mutual lease-lend assistance between the two countries, and in the course of the war a network of similar agreements was made between Great Britain or the U.S.A. and most of the other Allies.

Aid provided by the U.S.A. reached a total value of \$40,000,000,000 (then approximately £10,000,000,000), and provided by Great Britain was worth £2,078,500,000 more than half for accommodation, food, and equipment provided for U.S. forces in Britain and for shipping services, notably the loan of the liners *Queen Mary* and *Queen Elizabeth* as transports for American troops. British aid to Russia reached £318,000,000, to Poland £228,000,000, to France £106,000,000 ; lesser amounts went to other Allies. The passage of the Lease-Lend Act, the "most unsordid act in history," as Churchill described it, and the subsequent agreement with the U.S.A. meant that Britain was assured, without anxiety, of all material and the U.S.A. could give her, even before that country was forced into active war.

On the same day that Japan attacked Pearl Harbour, December 7, 1941, she made other lightning thrusts, seizing the international settlement at Shanghai, landing forces in Hong Kong and Malaya. On December 10, Japanese seaborne aircraft sank off Malaya the only two powerful British war vessels in the area, the *Prince of Wales* (35,000-ton battleship) and the

Repulse (37,000-ton battleship), with the loss of 700 out of 3,000 crew ; among those lost was Admiral Sir Tom Phillips (1888-1941), who went down in the *Prince of Wales*. Hong Kong fell on December 25, 1941 ; Singapore, invaded from the mainland, fell on February 15, 1942 ; thousands of Australian soldiers hurriedly returning home from North Africa to defend their land against the Japanese were caught at Singapore and made prisoner.

Turning Point in the Pacific

By May 15 the Japanese were in possession of all Malaya and had forced the British across the Burma-India frontier into India. The Japanese landed at Rabaul in New Britain on January 23, 1942, at Lae and Salamaua in Australian New Guinea on March 8. In New Guinea they met the stubborn defence of forces from the threatened continent of Australia who held up their advance to such good effect that it was September 15 before they reached their farthest point, Iorabaiwa, only 32 miles north of Port Moresby. From there they were forced to retreat on September 30, and thenceforth were pressed back steadily. This failure, and the landing of U.S.A. forces in August on Japanese-occupied Guadalcanal Island in the British Solomon Islands, marked the turning-point of the war in the Pacific. The Japanese attempted an invasion of India from Burma, but not until March 17, 1944, and by August 25 they had been driven back across the border.

Change in North Africa

In November 1941 the British took the offensive once more in North Africa, relieved Tobruk, and advanced to take Benghazi on Christmas Eve ; but they were obliged to withdraw again in February 1942, and between May 26 and July 1 a strong German attack under Erwin Rommel (1891-1944) drove them back to Alamein, 250 miles inside the Egyptian border and only 50 miles from Alexandria. Changes in command were made after Churchill visited Cairo in August, and General Alexander, now the commander-in-chief, with Lieutenant-General



A FLYING BOMB DID THIS. The ruins of the Guards' Chapel, Wellington Barracks, Hyde Park, London. The Chapel was hit during a Sunday morning service.

Montgomery in operational command, prepared to give decisive battle to Germans and Italians. The Battle of Alamein began on October 23, 1942 ; 16 days later the Axis forces had been driven out of Egypt. This was the turning point of the war in the west. Allied forces, most of them American with some British, landed in Algeria on November 8. The combined forces from east and west, meeting in Tunisia, forced the surrender in Cape Bon Peninsula, on May 12, 1943, of the last Axis troops in North Africa.

Germany Surrenders Unconditionally

In the subsequent conquest of Sicily, Italy, and North West Europe, British and Imperial (in particular Canadian) forces played a conspicuous part at the side of their Allies. The R.A.F. carried a weight of attack against Germany far heavier than that of the Luftwaffe against Britain. The first unconditional German field surrender, in Italy, made on April 29, 1945, was to the British commander (by then Field Marshal) Alexander. German forces in north-west Germany, Denmark, and the Netherlands surrendered in the field on May 4 to another British commander, Montgomery, also by now a Field Marshal. Germany surrendered unconditionally to General Eisenhower, Allied commander-in-chief, at Reims on May 7. Next day the British celebrated the victory by a holiday—Victory in Europe, or VE day. And



A GERMAN FLYING BOMB on its course over London. When the engine cut out, the bomb nose-dived, and exploded on contact.



BRITISH INVADE NORMANDY. After long and meticulous planning, the Allies began the liberation of Europe by large-scale landings in Normandy between the Orne and the Cotentin peninsula, on D-Day June 6, 1944. Here, British troops are wading ashore from assault landing craft (L.C.A.); behind them are tank landing craft (L.C.T.) with bows open.

on July 17 Winston Churchill, representing the U.K.; President Truman, representing the U.S.A. (Roosevelt had died suddenly on April 12); and Marshal Stalin, representing Russia, met at Potsdam, near Berlin, to consider the future of Germany and make arrangements for its occupation. As a general election was pending in Britain, the leader of the opposition, Clement Attlee, was also present.

Flying Bombs and Long-range Rockets

There was a series of "tip-and-run" raids on English south-coast towns during 1943, and in February and March 1944 several fairly

then, after the Germans were driven out of Walcheren in November 1944, close to The Hague. This bombardment continued until March 27, 1945, by which time the Allies had cut communications between the launching sites and Germany.

British Scientific Research

Before the U.S.A. came into the war, British scientists had done a great deal of work on finding means of harnessing, for use in a bomb, the energy released by splitting the atom. After America came in, the fruits of British research were placed at America's disposal and



MULBERRY HARBOUR. The invasion of Europe could not have succeeded without unprecedented engineering feats such as that of the secret construction in Britain of Mulberry, the prefabricated harbour assembled in the British landing sector at Arromanches. This is an oblique view looking S.W. showing pier-heads, a barge pier, and floating roadways, all surrounded by breakwaters.

Photos. British Official



THE END IN GERMANY. Field-Marshal Montgomery received the unconditional surrender of all German forces in N.W. Germany, Holland, and Denmark in an army tent on Luneburg Heath on May 4, 1945. Here Gen.-Admiral von Friedelburg, Supreme Commander of the German navy, is signing as one of four German plenipotentiaries in Montgomery's presence.

an army of British scientists was transported to Alamogordo in New Mexico where, far away from any possible enemy attack, they could collaborate with American colleagues in the labours that eventually produced the atomic bomb. News of their success reached President Truman at Potsdam, he at once informed Churchill. They decided against telling Stalin: he was simply informed that the Allies had at their disposal a very powerful weapon on an entirely new principle. Russia was not then at war with Japan, and had brought a tentative "feeler" for peace from Tokyo. The western Allies rejected this overture and an ultimatum was given asking for unconditional surrender with the alternative of annihilation.

Mulberry Harbour

The prefabricated harbour called Mulberry (from the code name used in references to it during its construction), without which the invasion of Normandy could scarcely have been consolidated, was a British inspiration invented and made in Britain. The parts for two harbours were made: that towed in sections to the British landing beaches at Arromanches was successfully completed, despite the violent storms of June 1944, and remained in use for landing troops, vehicles, and stores until the Allies had secured ports farther east nearer the then battle line. The harbour towed to the American landing beaches on the Cotentin Peninsula was so badly

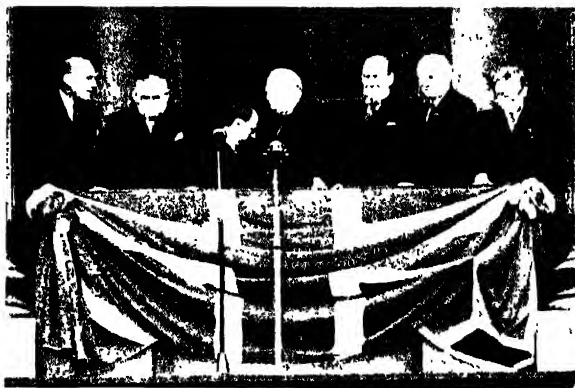
damaged by violent seas during construction that it never came into use. The American capture of Cherbourg on June 27 rendered its loss less important than it might otherwise have proved.

Pipe Line under the Ocean

Another British invention of immense value in the invasion was PLUTO (Pipe Line Under The Ocean), a pipe-line laid on the bed of the English Channel from Fawley in Hampshire to Cherbourg, through which ample supplies of petrol for air and land war transport were pumped. A second line was later laid between Dungeness, in Kent, and Boulogne. At the height of the campaign in France 3,000,000 gallons a day were being delivered from England to France by Pluto.

Once the Germans had been driven out of France, war-time restrictions began to be relaxed in Britain, although it was May 10, 1945, before all lighting restrictions were abolished. Fireguard duties were discontinued, except in London and south-east England, in September 1944, the Home Guard, which had replaced the Local Defence Volunteers formed on May 14, 1940, was stood down on November 1, 1944. R A I Balloon Command, which had been formed on November 1, 1938, to keep barrage balloons flying over targets likely to attract aerial attack and prevent their being dive-bombed, was disbanded on February 5, 1945. Fireguard duties were suspended in London and south-east England on March 24, 1945.

When the war with Germany ended, Churchill proposed to the leaders of the Labour and Liberal parties that the existing parliament and the coalition government should be maintained



THE VICTORY CABINET. On what was known as V.E. Day, May 8, 1945, one of two days of public holiday following Mr. Churchill's broadcast announcing the end of the war in Europe, great crowds gathered in London streets. Mr. Churchill is seen here with his Cabinet outside the Ministry of Health. Left to right, Oliver Lyttelton, Ernest Bevin, Churchill, Sir John Anderson, Lord Woolton, Herbert Morrison.

until the end of the war with Japan. Attlee and Sinclair would not agree to this; and on May 23 Churchill tendered his resignation. The King invited him to form a "caretaker" government pending an election. Parliament was dissolved on June 15.

Polling day for the new house (except in a few constituencies) was on July 5, but the declaration of results was delayed because time had to be allowed for the bringing home of the votes cast by men and women serving overseas. The Labour party secured 392 seats, the Conservatives 189, the National Liberals 13,

the Liberals 12. Churchill with his caretaker government resigned, and the King invited Attlee to form a cabinet.

The reconquest of Burma by the British 14th Army was completed with the recapture of Rangoon on May 3, 1945. Fighting in Malaya, Borneo, and New Guinea was still continuing when on August 14 Attlee announced the unconditional surrender of Japan; but it was still some weeks before British authority was restored in all British territories in south-east Asia and the Pacific by local surrenders of the Japanese commanders.

LESSON 27

Readjustment to a Changed World

WITH the celebration of VJ (Victory over Japan) day on August 15, 1945, the fighting in the Second World War came to an end for Britain as for her Allies. She had lost by enemy action 244,723 servicemen and women, and 60,585 civilians (compared with a total of 812,317 dead in the First World War). But she had been left immeasurably more impoverished economically. Before lease-lend was introduced in 1941, she had sold £1,118,000,000 worth—by far the greater part—of her overseas investments, interest on which had been an important contribution to the invisible factors that had helped her to balance her pre-war foreign trading account. Nearly a third of the buildings in England and Wales, many in Scotland, particularly in Glasgow, and a few in Northern Ireland had been destroyed or more or less seriously damaged by German air attack.

Conscription Retained

The huge army, navy, and air force under arms when hostilities ended in 1945 was steadily demobilised. But because military forces were needed for the British zone of occupation in Germany, conscription was retained. Under the National Service Act of 1947 young men were called up for a period of service that varied at different times from 18 months to two years. Ten years later national service was still in operation: it had been needed not only for Germany but also to meet disturbances within the Commonwealth (Communist guerrilla activity in Malaya, Mau-Mau savagery in Kenya, political terrorism in Cyprus); for the war in Korea, 1950-53, in which United Nations forces (mainly American) forced back Communist forces that had invaded South Korea from North Korea; and the constant threat that communist Russia offered to the free world.

Only in 1957 was the approaching end of national service announced by the government,

for 1960—and even then, less because the world's political future was any more settled than because the development of modern weapons of war, atomic weapons, guided missiles, and other manifestations of "push-button" warfare—promised increasingly fewer calls upon man-power.

The abrupt ending of lease-lend by the U.S.A. made it difficult for Britain to procure some of the basic foods that must necessarily be imported to feed her large population, and food rationing continued after the war, at times with quantities reduced below those allowed in war-time. Eventually fewer and fewer commodities were rationed, though the rationing of the last foodstuffs was not ended until 1954. The Labour government maintained price controls and much of the system of permits for all kinds of trading that had been built up during the war. These restrictions were irksome and far from popular, and it was claimed that they hindered enterprise; but they kept prices fairly stable.

In 1945 Lord Keynes (1883-1946) negotiated an agreement whereby the U.S.A. made a loan to Britain of \$3,750,000,000. By the time this had been ratified by the U.S. congress, the value of the dollar had so declined that this amount was worth much less in goods than when the loan had been negotiated. It had been calculated to last until 1951, but it was exhausted within two years. Yet by that time British economy had sufficiently recovered to be able to begin repayments on the scale and at the date arranged (December 1950) and to maintain these hereafter.

More important to Britain's economic recovery, as to that of the rest of Europe, was "Marshall Aid." This was the popular name for the European Recovery Programme first proposed by George C. Marshall when he was U.S. secretary of state. The financial assistance received by Britain under this scheme was

devoted to advancing British export trade, even at the expense of prolonging the severe shortage of goods available at home.

It was the attitude of the U.S.S.R. to the European Recovery Programme that most clearly indicated the hostility of that country, which now faced the U.S.A. as the second greatest world power, to any measure that might increase American influence. This served to heighten in the eyes of western Europe (most of the eastern European countries had become satellites of the U.S.S.R.) the menace of communism and the possibility of an extension of Russian domination.

The formation of "Western Union" under a 50-year treaty of alliance between Britain, France, Belgium, the Netherlands, and Luxembourg, in 1948, was followed a year later by the North Atlantic Treaty, of which Britain was one of the original signatories, along with the U.S.A., Canada, France, the Netherlands, Belgium, Luxembourg, and Norway, by which these nations became pledged to help one another against any aggressive action by another country. In 1950 the North Atlantic Treaty Organization was set up on a military basis, and Russian designs on western Europe appeared to be halted thereby.

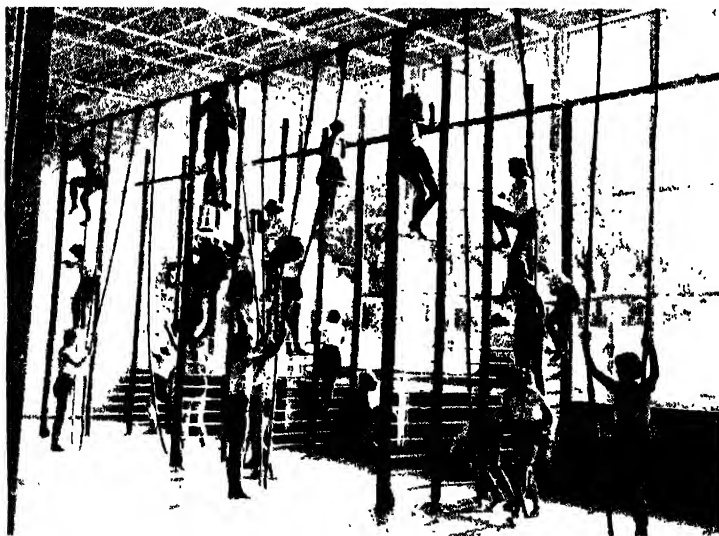
The Labour government of 1945-50 will be remembered as the inaugurator of the "welfare state." Much of the legislation enacted during those years was the fruit of inquiries set afoot and decisions taken by the war-time Coalition government. Indeed the Education Act of

1944, reorganizing the education of the country on a basis of free primary and secondary education for all with greatly increased facilities for free university and technical education, was introduced by a Conservative minister of education, R. A. Butler. The whole working of national insurance was now remodelled and vastly extended by two acts passed in 1946, becoming effective in 1948. These dealt with unemployment, pensions, and other allowances. Benefits payable during sickness or injury remained part of national insurance. But medical service was detached from national insurance and reorganized under a comprehensive national health service, through which all medical attention, appliances, and hospital treatment were allowed, without charge, to everyone resident in Britain. (Partial charges for these services were introduced later.)

But the Labour party had also won the 1945 election on a programme of nationalisation of the country's chief assets, and the government speedily set about the fulfilment of this programme. The Bank of England was nationalised in 1946; coal mines in 1947; gas, electricity, and railways and road transport in 1948. Nationalisation of the steel industry, which aroused much opposition, was not complete when the Labour government sought re-election in 1950.

Changes in the Commonwealth

British rule in India came to an end in 1947, giving place to the two independent countries of India and Pakistan, both remaining within the Commonwealth with full dominion status. In January 1950, following discussion at a special Commonwealth conference convened for the purpose in 1949, India became the first republic within the Commonwealth. Thus loyalty to the Crown was no longer the basis of Commonwealth membership, though India admitted recognition of the person of the British monarch as Head of the Commonwealth. Pakistan became a Commonwealth republic in 1950. Ceylon, created a dominion in 1948, also leaned towards republicanism. The grouping of other parts of the Commonwealth into larger units with a view to eventual attainment of self-government proceeded steadily. The states of Malaya were



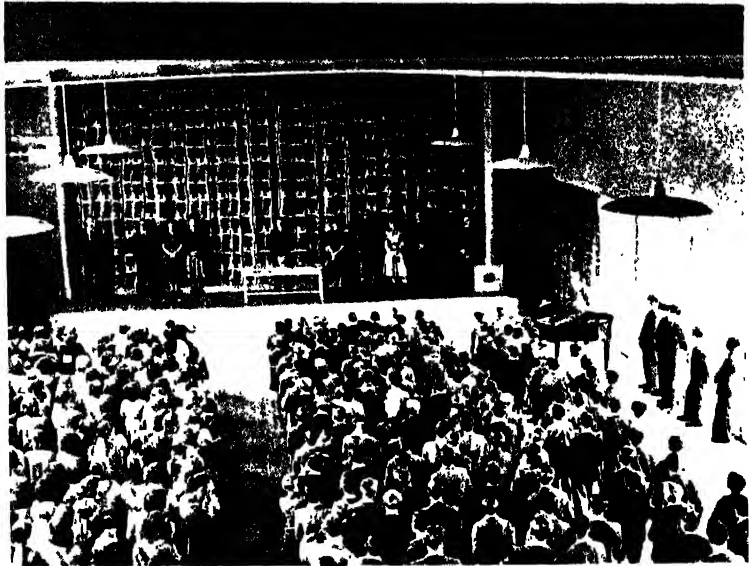
BUILDING BRITAIN'S FUTURE. An aspect of contemporary social development that lies beyond controversy is the unprecedented emphasis now placed on the mental, moral, and physical well-being of the rising generation. Here is the finely equipped gymnasium of a London County Council secondary school for girls at Tulse Hill, opened in 1955.

federated in 1946. In Africa, the two Rhodesias and Nyasaland were federated in 1953, and the Gold Coast Colony (with Ashanti and British Togoland) was made a self-governing state in 1954, achieving full independence within the Commonwealth in 1957, under the new name of Ghana. Federation of the British colonies in the Caribbean area (the British West Indies, with British Honduras and British Guiana on the mainland) had been agreed in principle by 1956.

On the other hand, Burma, offered in 1946 the choice of independence within or without the Commonwealth, left the circle in 1948, and in the same year Eire proclaimed her withdrawal from the Commonwealth, inaugurating the Republic of Ireland in 1949. All British forces were gradually withdrawn from Egypt, the last leaving in 1955. The Anglo-Egyptian Sudan, ruled as a condominium by Britain and Egypt since 1899, was offered the choice of joining the Commonwealth, being integrated with Egypt, or complete independence, and chose the last, proclaiming herself the Republic of the Sudan in 1955.

That part of mandated Palestine remaining under British authority in 1945 became the scene of violent and tragic hostility between the Arabs who had formed its population for 600 years and the Jewish immigrants who had been gradually admitted during British administration. Recommendations for solving the problem were made by the United Nations, but none proved acceptable to all interested parties. Eventually Britain announced that she would relinquish her mandate on May 14, 1948. On that date she finally withdrew from Palestine, leaving the Jews to proclaim at once the existence of a republic of Israel.

The general election of February 1950 again gave the Labour party a majority in the house of commons, but one so tenuous that Attlee's government, precariously poised in a country grown tired of "austerity," was not able to last long. Another election in October 1951 brought the Conservatives back to power with a majority only slightly more firm, and Winston Churchill, soon to become a knight of the



"ACT OF WORSHIP." Morning assembly at the Barclay secondary modern school (1950), serving the "new town" of Stevenage, Herts. The Education Act of 1944 requires that every state-maintained school should begin each day with an "act of corporate worship."

Garner, formed his first and only peace-time administration. He resigned the premiership in 1955, and was succeeded by Sir Anthony Eden (created K.G. 1954). Eden held an immediate election, which resulted in a Conservative majority increased to 59. But Sir Anthony's premiership was destined to be unexpectedly short: ill-health enforced his retirement in the opening days of 1957. He was succeeded by Harold Macmillan.

Conservative administration brought a gradual relaxation of price and other controls, including the ending of rationing; but this led to a steady rise in prices and therefore in the "cost of living," with accompanying demands from industry for higher wages, and a gradual lowering of the internal value of the pound. The immense burden of armaments also increased the country's economic burden.

For a time after the death of Stalin in 1953 it seemed that the Russian attitude towards the West was changing in the direction of a desire for increased friendliness. There was much talk of "peaceful co-existence," culminating in a so-called "summit" conference at Geneva in July 1955 of the British and French prime ministers, the president of the U.S.A. (Eisenhower), and the premier of the U.S.S.R. (Bulganin). The apparent atmosphere of good will fostered by this meeting, precariously maintained during a visit to Britain the following April of Bulganin and his chief lieutenant Krushchev, did not long endure.

The recording of history can have no tidy ending; for history itself never ends. It continues right up to this morning's newspaper and beyond, and succeeding events may spring from roots buried deep in the past. It is almost impossible to recognize and isolate a chain of causation while one lives with it, and for that reason it is not helpful to bring such a record as this too near to contemporary events. One must call a halt somewhere, cease the attempt to give facts their just value or arrange them in anything like a true relationship. The student must be content to note only general tendencies.

At the moment of going to press with this final Lesson, for example, the manifold problems arising from Egypt's "nationalisation" of the Suez Canal in July 1956 remain unsolved. The leadership of Britain and France in active opposition to this Egyptian move; their joint military action against Egypt in the Canal area, which aroused strong criticism at home and in the United Nations assembly, jeopardising for a time the friendship of the U.S.A. and even the continued existence of the Commonwealth itself, and to all appearances completely failing to achieve its object; the ultimate effect on British economy—the story of these things is not ended and, anyway, who can vouch for their ultimate importance in the long record of British history?

Britain's Present and Future

A nation's history is essentially a tale of continuous readjustment to circumstance. Whenever a nation has failed to keep pace with circumstance, it has dwindled and perished. Yet the Lessons in this Course must have served to demonstrate time and time again to the perceptive student the peculiar genius of the British people for such readjustment. The

process has been sometimes slow and frequently painful, but always in the long run successful—often brilliantly so; and there is no reason to believe to-day that the British have lost their great gift of adaptability any more than they have lost their old courage, inventiveness, and enterprise.

In the most general terms, then, let us accept the fact that for the economic recovery she so urgently desires Britain must still depend primarily on her export trade to achieve the necessary "balance of payments" and avoid the disasters of inflation and even bankruptcy; that such wisdom as statesmanship possesses is constantly devoted to this end; and that the British people as a whole are optimistic enough to believe it will ultimately be achieved.

But on one condition! The overriding menace to Britain is the overriding menace to the world—war, and the threat of man's total self-extinction. The avoidance of this final disaster, which at times seems so near yet always seems so incredible to sane-thinking people, remains the other great preoccupation of British statesmanship, under whatsoever direction may be followed.

In every respect other than the material, Britain still holds her position as a leader in the comity of nations, sustained by the hope that with the other nations of the Commonwealth she may still help to constitute the most powerful balancing force in the shaping of the world's future.

This hope could find no more fitting symbol than the accession to the throne in 1952 and to the headship of the Commonwealth—of a second Queen Elizabeth, representing in her august office and symbolising in her name all the greatness of Britain's past, and in her youthful person all the promise of greatness yet to come.

BOOK LIST

General. *A Short History of the English People*, J. R. Green (Dent's Everyman Library, illus. edn. Macmillan); *History of England*, G. M. Trevelyan (Longmans); *History of England* (chiefly 1685-1702), and *Essays*, Lord Macaulay (Everyman); *Short History of England*, G. K. Chesterton (Chilton & Windus); *History of England*, H. Belloc (Methuen); *History of the English People in the 19th Century*, I. Halevy (Penguin and other editions); *A History of the English Speaking Peoples*, Winston S. Churchill, 4 vols. (Cassell, and Educational Book Co.).

Periods. *Roman Britain*, R. G. Collingwood (O.U.P.); *England before the Norman Conquest*, C. Oman; *England in the Later Middle Ages*, K. H. Vickery; *England under the Tudors*, A. D. Innes; *England under the Stuarts*, G. M. Trevelyan; *England under the Hanoverians*, C. Grant Robertson; *England since Waterloo and Modern England 1885-1932*, J. A. R. Marriott (all Methuen's History of England Series); and similar volumes in the Oxford History of England; (*First World War Memoirs*, 6 vols., D. Lloyd George (Nicholson and Watson); *The Second World War*, 6 vols., Winston S. Churchill (Cassell)).

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Queen Elizabeth I, J. F. Neale (Cape); *Samuel Pepys*, Arthur Bryant (C.U.P.); *Cromwell*, John Buchan (Hodder); *Marlborough, his Life and Times*, Winston S. Churchill (Harrap); *Wm. Pitt, Earl of Chatham*, Lord Rosebery (Macmillan); *Wm. Pitt*, J. Holland Rose (Bell); *Gladstone*, Lord Morley (Macmillan); *Gladstone*, P. Migne (Murray); *Disraeli*, W. F. Monypenny and G. F. Buckle (Murray).

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PHONETICS

THE study of the speech sounds of a language is complementary to the studies of its development and its literature. This Course thus helps to complete the picture framed by the Courses on Philology (in this volume) and English Literature (Vol. 2). But phonetics has a further immediate practical value in that it can help one to acquire a pleasing and correct manner of speech which is an asset in both social intercourse and business life. Bernard Shaw's "Pygmalion," in which a common Cockney girl is turned into a passable imitation of a well-born lady by a professor of phonetics, possibly said the last word on this aspect of speech study. The English-speaking people are highly speech-conscious— even guilty perhaps of speech snobbery — and the ability to produce pure vowels and distinct consonants is one that is worth while acquiring. The pronunciations given in this Course are those of Received Standard English, the speech of the educated throughout the English-speaking world. It has no intrinsic merits over the honest regional dialects, save the great advantage that it is understood everywhere, but for that one reason it well repays a few hours' study.

10 LESSONS

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LESSON 1

Scientific Basis of Phonetics

THE science of phonetics can be divided into two main fields of study. The first is the study of the sounds which constitute ordinary human speech. These sounds are produced by the passage of the breath through the throat, the mouth, and sometimes the nose, modified and varied by different positions, movements and conditions of the various parts of the mouth, etc.

If you take a hand-mirror and hold it so that the light is reflected into your mouth, you will be able to see, if you open your mouth wide enough, several important organs of speech. First, there are the lips, which can be brought together, or separated more or less widely, or pouted forward in front of the teeth, or drawn back at the corners.

Then come the teeth ; those of the upper jaw are fixed, while the lower teeth move up or down with the lower jaw. Behind the upper teeth and the gums can be seen the roof of the mouth, or palate. The part of this nearest to the front of the mouth is hard and unyielding to the touch ; but if you pass the tip of the tongue backwards along the hard palate, you will find it reaching a softer, more yielding continuation of this, called the soft palate or velum. This ends in a small, dependent V-shaped flap called the uvula.

Tongue and Pharynx

Prominent in the mouth is the tongue. It is fixed at its lower end, as a thick mass of muscle, to the lower jaw, its upper end consisting of a highly flexible, fleshy, elastic flap, rounded at its tip and capable of being moved in many directions. The tongue, being fastened to the lower jaw, moves up and down with the latter.

The space which is visible at the top of the throat, at the back of the mouth beyond the soft palate, is called the pharynx. There is a passage leading from the pharynx up into the cavity of the nose, and thence, through the nostrils, to the exterior. This passage, which is usually open in ordinary breathing, can be closed by the raising of the soft palate (with the uvula) against the back of the pharynx, and this is the case in the production of the majority of speech-sounds. The entire mouth cavity is lined with a soft membrane.

Structure of the Throat

The throat proper contains two passages : a collapsible tube, the oesophagus or gullet, down which the food passes ; and, in front of this, the trachea or windpipe, through which the air passes in going to and from the lungs. This is

a non-collapsible tube, about four and a half inches in length, held open by rings of cartilage. The upper end of the trachea is called the larynx. It consists of a number of cartilages forming a structure like a more or less triangular box without top or bottom. The strong front cartilage of the larynx, forming the prominence commonly called the Adam's apple, can be felt in the throat just below the chin.

Across the opening of the larynx, which is called the glottis, are stretched two elastic, membranous flaps or folds, joined to the larynx in front, and ending at the back in a pair of cartilages, moved by muscles in such a way that the flaps can be drawn towards each other so as to close the glottis wholly or partially, or can be relaxed and left folded at the sides of the larynx.

The Vocal Cords

These flaps are called the vocal cords, and they are of the greatest possible importance in the production of the sounds of speech. When they are relaxed, so that the glottis is quite open, the air passes through without any hindrance. When they are drawn across the glottis, the air, in coming out from the lungs, has to force its way between them, setting up in the vocal cords themselves a vibration which is transmitted to other parts of the throat and head. This vibration can be felt if you lay your fingers lightly on the temples, on the upper end of the jawbone, or on the throat just below the chin in front of the larynx, at the same time pronouncing the sound z-z-z (without any vowel sound), like the buzz of a bee, prolonging it as long as possible. This should be compared with the sound s-s-s, in the production of which no vibration is felt, as the vocal cords are not drawn across the glottis.

A little above the larynx is the epiglottis, a small, tongue-like structure attached to the front of the pharynx, and acting as a valve to open or close the trachea. Its chief function is to prevent food, etc., from entering the windpipe during the act of swallowing, and it plays little or no part in speech.

Finally, there are the lungs, into which the air is drawn through the nose or mouth, the trachea and the bronchial tubes, and which expel the air again by the same passage. The lungs and the diaphragm control the volume and force of the air stream.

The second field of study in phonetics is the art of representing speech sounds on paper, in such a way that no doubt can exist as to what sound is denoted by each symbol used—in other

words, the invention of a phonetic alphabet of simple, easily recognized, unambiguous symbols which can be used without constant explanation. The alphabet as used in ordinary English spelling is unsatisfactory, as so many of the letters represent more than one sound (e.g. *g* in *gem* and *go*, *c* in *city* and *cook*, *a* in *hat* and *hall*). This alphabet can, however, be adapted to the purpose by rigorously limiting each letter to the representation of one sound, by always using the same letter to represent the same sound, and by adding a few special symbols (inverted letters and the like) to make up deficiencies. Thus in this Course *g* will always be used to represent the sound of the initial consonant in *get*, *go*; the inverted *c* [*˘*] will represent the sound of the vowel in *not*, and so on.

Received Standard English

Alphabetic symbols are not adapted to express small differences in sound. For instance, the same symbol is used for the initial consonant in *get*, *give*, as for the corresponding consonant in *go*, *guard*, though, as will be seen, there is a distinction between the two pairs. For detailed study, a system of notation capable of indicating very minute differences in sound

is needed, such as is provided in the alphabet of the International Phonetic Association (I.P.A.). For the present purpose the modified practical alphabet used in this Course is, however, entirely satisfactory.

It should be noted that letters enclosed between square brackets [] must be taken as having the restricted values referred to above. A complete set of the characters necessary for representing modern English sounds in phonetic symbols will be given later; for the present each symbol will be introduced when necessary. The student must learn to distinguish very carefully between *sound* and *spelling*; the use of a phonetic notation, as will be seen later, helps very materially in this.

It must be clearly recognized that there are many varieties of dialect spoken in England, even among well-educated people, and all of these are equally interesting scientifically; but the pronunciations given in these lessons are those of the dialect known as *Received Standard English*. This, as its name implies, is generally accepted as the "best" English; it is natural and unstudied; it is not influenced by local dialects, nor is it limited to any particular part of the country.

LESSON 2

Classification of Consonants

THE sounds of speech are divided into two groups; vowels and consonants. The old definitions stated that a vowel could be pronounced by itself, while a consonant could be pronounced only with the help of a vowel. That this is untrue so far as consonants are concerned will be realized in a moment by anyone who has practised pronouncing the buzz *z-z-z*, or the hiss *s-s-s*, as recommended in Lesson 1.

The real distinction lies in the fact that in the pronunciation of a vowel, the air, after passing the larynx, proceeds outwards through the mouth or nose without being hindered by any obstruction, while in the production of a consonant two opposite parts of the mouth are brought into contact either so closely as to cause a complete, if momentary, stoppage (e.g. the two lips in forming the sound [b]), or closely enough to cause perceptible friction (e.g. the point of the tongue and the upper teeth in forming the initial sound of *thin*). There is always a definite distinction between vowels and consonants, and the ambiguous terms *semi-vowel* and *semi-consonant* should be avoided.

The consonants will be dealt with first, as their formation is more easily grasped than that of the vowels. Since each language uses only a limited number of consonant and vowel

sounds, we shall, when necessary, give examples from other languages, and the student should practise these less familiar sounds when he has learnt how they are made. It is advisable that *familiar* sounds should be practised first, every visible movement being watched in a mirror, and the sounds being uttered aloud, until a considerable degree of mastery over the tongue, vocal cords, etc., has been attained.

Subdivisions of Consonants

It has already been pointed out that in the formation of a consonantal sound the breath meets with some definite obstruction or hindrance in passing through the mouth or nose cavity, caused by the approach, or constriction, of parts of these cavities (e.g. lip and teeth, tongue and palate, etc.). In certain cases the constriction occurs *below* the glottis. Taking this as the general definition of a consonant, we can now subdivide the group.

Consonants can be classified in three different ways.

First, they can be divided into two groups according as they are or are not accompanied by the vibration of the vocal cords. The characteristic hum or buzz which is heard when the cords vibrate is called *voice*; consonants which possess this quality are said to be *voiced*.

Those which are pronounced with the glottis open (and, therefore, without vibration) are called *voiceless, unvoiced, or breath consonants*. Voiced and voiceless consonants often occur in pairs, and a good example in English is the pair already referred to : the voiced [z] as compared with the voiceless [s]. Other pairs are (1) the sounds of the medial consonant in measure, the phonetic symbol for which is [ʒ], and the initial consonant in *ship*, the symbol for which is [ʃ]; (2) the initial consonants in *that* and *thin*; the symbols for these are respectively [ð] and [θ]; both of these letters being taken from the form of alphabet in use before the Norman Conquest, when they were used for the modern *th*; (3) the initial consonants in *very* [v] and *for* [f] or the consonants in *of* [v] and *off* [f].

The student should practise each of these four pairs, pronouncing the voiced and voiceless consonants alternately ([v-f-v-f . . . ; z-s-z-s . . .] etc.), noting the different sensations produced in the larynx, and being careful, in passing from voiced to voiceless and *vice versa*, not to break the continuity of the sound, but to send out the air-stream continuously, as long as the breath lasts.

When these sensations have been fully mastered, the student can consider other pairs of consonants, not so easy to deal with. The sounds b, d, g (which cannot be prolonged) all exist in English, together with the corresponding voiceless sounds p, t, k. Voiced l and w are both common in English; the student should practise *unvoicing* them, trying to produce the same sensations in the larynx, etc., as in passing from z to s, etc. The voiceless l, the symbol for which is l̥ (the small circle symbolises the opening of the glottis), occurs frequently in Welsh, where it is written ll. The voiceless w (w̥) is the sound heard from Scottish, Irish, and northern English speakers in words beginning with *wh*, e.g. *what, when*, in which most speakers of Received Standard English use w.

Vowels are usually pronounced with *voice*, but, as will be seen later, can be voiceless.

Where Consonants are Formed

The second method of classifying consonants is according to the part of the mouth or throat used in producing them. Consonants formed in the throat (i.e. by constriction at or below the glottis) are rare in European languages, and do not normally occur in English (unless one considers the emphasised breathing h, which is called an *aspirate*, a weak throat consonant). A variety of throat consonant called the *glottal stop* is much used in German and Danish and also in some Scottish-English dialects (e.g. as a development of t between vowels : wa'er for water, etc.).

Mouth consonants are formed primarily by means of the lips, teeth, tongue, and palate

Beginning at the front of the mouth, we have a series of sounds made with the lips : b, m, etc. ; others are made with the lower lip and upper teeth : f, v, etc. Tongue consonants are named from the part of the tongue used : point (e.g. d) ; blade (e.g. s) ; front (e.g. j, the symbol for y in you) ; back (e.g. g). When the tongue is used in connexion with the teeth : point-teeth (e.g. p'.

How Consonants are Formed

The various modes of activity of the tongue, lips, etc., form the third method of classifying consonants. In this respect they can be arranged in five groups.

(1) *Stop Consonants* or *Stops*. For these the air-stream is completely checked for an instant by an obstruction at some point in the mouth passage ; no sound is heard until the obstruction is removed, when the air rushes out with a small puff or explosion. In the sounds b, p, the point of closure is at the lips ; in d, t, between the point of the tongue and the gums ; in g, k, between the back of the tongue and the soft palate.

(2) *Open Consonants*. In these there is no complete stoppage of the air-stream, but the air-passage is narrowed very considerably, enough to cause definite friction, so that the air has to push its way past the obstacle ; e.g. the consonants f, v, where the lower lip is placed against the upper teeth, so as to hinder the air, but not stop it entirely.

(3) *Divided Consonants*. These are formed by the tongue, arched in such a way that some part of the line of the upper surface is pressed against the opposite part of the palate, while the air is allowed to escape at the sides, or, as sometimes happens, at one side. (In the latter case, the consonant is called *unilateral*, or *side-divided*.) The typical consonant of this group is l.

(4) *Nasal Consonants* or *Nasals*. The air-stream is stopped entirely at some point in the mouth, but, by the shifting forward of the soft palate, the passage between the pharynx and the nasal cavity is opened, and the air permitted to pass out continuously through the nose. In the formation of m, the lips are closed, but the sound can be prolonged, and if a finger is held beneath the nose the stream of air can be felt. It should be remarked that nasal consonants, like all others, can occur both voiced and voiceless, but the voiceless nasals are almost inaudible. The student should practise unvoicing m and n, when he will hear the result as a kind of mild snort.

(5) *Trilled Consonants*, e.g. the Scottish r. These are formed by the rapid vibration of the lips, or of the point of the tongue, or the uvula,

against the palate. This vibration interrupts the air-stream by a series of momentary stoppages, alternating with equally brief openings. Trills hardly exist in Standard English.

Having considered these three ways of grouping consonants, we are in a position to describe or define technically the individual consonantal sounds. For instance, *b* is a *voiced-lip-stop*, *m* a *voiced-lip-nasal*, *s* a *voiceless-blade-open*, *l* a *voiced-point-divided*, and so on.

It should be noted that some of the terms formerly in use with reference to consonants are

now avoided by most phoneticians as being ambiguous, or not in accordance with facts and, therefore, misleading. The term *guttural*, for instance, formerly used for *g*, *k*, etc., means "made in the throat," which these consonants are not. *Dental*, "of the teeth," referring to *t*, *d*, etc., is not applicable to English *d*, *t*, which are made against the gums. Further, such vaguely descriptive terms as *liquid* are best avoided. *Labial* and *labiodental* are correct enough for *b* and *f* respectively, but *lip* and *lip-teeth* are shorter and simpler.

LESSON 3

Pronunciation of English Consonants

IN English the group of lip and lip-teeth consonants includes the lip stops [*b*, *p*] and the lip-nasal [*m*]. Further, there are the voiced and voiceless lip-teeth [*v*, *f*]. The lip-nasal *m* sometimes becomes a lip-teeth-nasal when followed immediately by a lip-open, as in the word *comfort*. A pure lip-open, or bilabial open, does not normally occur in English, but is used in place of the lip-teeth-open in some parts of Germany. A lip-teeth-stop can be produced easily.

There are in addition two other groups of lip-consonants which must be noted: lip-back-open and lip-front-open. The former, in which the lips are approached closely enough to produce friction while at the same time the *back* of the tongue is raised, is, in its voiced form, the ordinary English [*w*]; the corresponding voiceless consonant [*wʰ*] occurs among some speakers in words spelt with *wh*. (This group is not normally pronounced with [*h* + *w*], as many people imagine.) The lip-front, which combines approximation of the lips with raising of the *front* of the tongue, occurs in French, in such words as *huit*, *fun*, *puir*.

Point and Teeth-point Consonants

This group includes a somewhat larger number of English consonants than any of the others. There are two point-stops [*d*, *t*], made with the point of the tongue against the gums. (French *d*, *t* are point-teeth-stops, i.e. made with the point of the tongue against the back of the upper teeth.) English [*ð*, *p*] (as in *this*, *thin*) are point-teeth-open consonants, voiced and voiceless respectively. These are usually made with the tip of the tongue just at the back of the upper teeth, but some speakers place the tip against the lower edges of the teeth.

The point-divided [*l*] normally occurs in English as a voiced consonant. In French, the voiceless [*l̥*] is also found, especially after voiceless consonants, e.g. in *souffle*, *breath* [süfɛ]; [*l̥*] is used also in Welsh, as has already

been pointed out. The English [*l*] is formed with a decided hollowing of the fore-part of the tongue, which gives it a distinctive character; this is especially noticeable after vowels such as those in *full*, *fool*, *fall*. The voice-point-trill [*r*] is used in Scottish-English. The English *r* (initially and between vowels, as in *rat*, *very*, *for ever*) is rather to be described as a very weak point-open consonant. An interesting variety of the point-trill is the inverted-point-trill, produced with the tip of the tongue turned upwards and backwards against the hard palate; this is heard in some dialects of the west of England.

The point-nasal [*n*] is made with the tongue in the same position as for [*d*], but with the soft palate brought forward, and the nasal passage opened. The forward movement can be felt if one practises passing from [*d*] to [*n*] (as in the word *sudden*) without moving the tongue. This process is called *nasalisation*; [*n*] can be described as a nasalised [*d*]. The opposite process, *denasalisation*, is illustrated by the group *nd*, where the nasal is changed to a stop by raising the velum so as to close the nasal passage. With this pair of consonants [*n*, *d*], the student should compare [*m*, *b*], which stand in a similar relation, the former being a nasalised form of the latter.

Blade and Blade-point Consonants

The blade is that part of the tongue which lies just behind the point. The most important consonants in this group are the open consonants, the blade-open [*z*, *s*] and the blade-point-open [*ʒ*, *ʃ*]. In the former pair, the blade of the tongue is brought lightly into contact with the hard palate a little behind the gums; in the latter (the medial consonants of *measure* and *fisher*), the tongue is slightly retracted or drawn back, and the point, as well as the blade, is raised against the roof. The blade-point-open consonants [*ʒ*, *ʃ*] are common in English in the groups *dʒ* [dʒ], as in *bridge*, *gem*, *jam*; and

(t)ch [tʃ], as in *witch, church*. The point-stops [d, t] in these groups become among some speakers blade or blade-point stops. Otherwise blade-(point)-stops do not occur in English.

Front and Back Consonants

The next part of the tongue to be considered is the front, lying between the back and the blade. The typical English consonant of this class is the voiced-front-open : the sound of *y* in *you*, phonetic symbol [j]. This sound occurs initially (note especially its presence in such words as *use, unit* [jūs, jūnɪt]) and medially in English, but not often finally, though some dialect speakers add [j] to the long vowel [i] in such a word as *see* [si:j]. The voiceless sound [j] should be practised ; it occurs in German, especially after *i, e* (as in *nicht*, not), and can sometimes be heard in English as the initial consonant of the words *humour, huge* [jūdʒ], etc., also pronounced as [hyūdʒ], etc. In these and all other front consonants the front of the tongue is raised to the hard palate, and the point is curved downwards so that it lies beneath the lower teeth. The front stops (phonetic symbols [p, t]) do not now occur in English ; they can be produced by trying to pronounce *d, t*, while keeping the tip of the tongue firmly behind the lower teeth. It should be noticed that in the production of these sounds a considerable part of the upper surface of the tongue can be seen in a mirror, whereas none of it can be seen in pronouncing point consonants, e.g. [d].

The voiced-point-nasal [ɱ] is used in French, Italian and Spanish, spelt *gn* in the first two, and *ñ* in the last, e.g. Fr. *seigneur*, Ital. *signor*, Span. *señor*. The voiced-point-divided [ɲ] occurs in Italian, e.g. in *figlia*, daughter. It is heard occasionally in English in such a word as *William*, as a substitute for [lj] (point-divided -f front-open).

The most familiar of the back consonants to English speakers are the back-stops [g, k],

voiced and voiceless, respectively. There are actually two varieties of each of these to be heard in English : one in such words as *gum, garden, good, go ; come, comb, coo, card ;* the other in such words as *give, get ; king, ken, keen*. It can be easily felt that the back consonants of the first group are produced slightly farther back in the mouth than those of the second group ; that is to say, using a part of the tongue a little nearer to the root, and a part of the soft palate a little nearer to the uvula. The second variety can be called back-advanced. The reason for the distinction lies in the character of the following vowel ; this will be more clearly seen when we have considered the vowel-sounds.

The back-open consonants are not used in ordinary Standard English. The back-open-voiceless is heard in such a word as the Scottish *loch*, or the German name *Bach*. Because this is an unfamiliar sound, some English speakers tend to replace it by a stop [k]. The voiced sound is even less familiar ; it can be heard from some Germans in words such as *sagen*.

The back-nasal [ŋ] is printed or written *ng* in ordinary spelling. It is the sound heard in *song, bring, singing* [sɪŋɪŋ]. It is produced with the back of the tongue in the same position as for [g], but with the nasal passage opened ; it is, in fact, a nasalised [g]. In a number of words [ŋ], when medial, is followed directly by the back-stop, produced simply by denasalising the [ŋ], without moving the tongue : *stronger finger* [fɪŋ-ɡɪŋ]. The group [ŋɡ] does not occur at the end of a word in Received Standard English, but can be heard from some speakers of Modified Standard or local dialects : [brɪŋɡ], etc. The back nasal does not occur initially in English.

The back-trill [R] is the *r* heard from the majority of French speakers, though in French the trill is only slight. It is produced by trilling the uvula against the back of the tongue. It is not common in English dialects.

LESSON 4

Vowel Sounds in English

VOWELS consist of *voice* (breath passing through the closed vocal chords), modified by differences in the configuration of the mouth-cavity produced by differences of position of the tongue, velum, and lips. If vowels are *whispered* (that is, with the vocal chords only partly drawn across the glottis, and thus with only slight vibration), or *unvoiced*, the character of the individual vowels can still be heard. In fact, such whispered, or even unvoiced, vowels are not uncommon in some languages (e.g. the final *i* in French *aussi, ainsi*).

There are four important points to be taken

into account when considering the character of a vowel. Three of these are concerned with the tongue, the fourth with the position of the lips. The chief movements of the tongue are up and down, and from back to front.

(1) The height of the tongue. The tongue can be raised towards, or removed farther from, the palate ; this movement is usually accompanied by, or caused by, raising or lowering of the lower jaw. In pronouncing the vowel in the word *pit* [ɪ], the tongue is high in the mouth, and the mouth-opening is small. For the Standard English vowel in *cat* [æ] (the symbol

is that used for the same vowel in Old English), the jaw is lowered, which means a fairly wide mouth-opening, and the tongue is at some distance from the palate. The vowel of *men* (for which the Greek [ɛ] is used) stands midway between the two.

With the Aid of a Mirror

It is a useful exercise to start with the vowel [i], and gradually open the mouth wider and wider, continuing the air-stream (and the voice) until the lower jaw is lowered as far as it will go. Care must be taken to keep the tongue well forward in the mouth (the tip can be laid gently against the back of the lower teeth), and to keep the sound steady and continuous. A good supply of breath is necessary to begin with, and it requires some practice (except for trained singers) to keep the movement smooth and slow enough. A long series of vowel-sounds can then be heard, beginning with [i], passing through [ɛ], and ending in an exaggerated [æ], but including many intermediate varieties. This should be practised with the aid of a mirror. The upward movement of the tongue is called *raising*, and the downward movement *lowering*. It is usually enough to distinguish three degrees of "height": *high*, *mid*, and *low*, and vowels are named accordingly.

(2) The horizontal position of the tongue. The tongue, as already stated, can be moved from the back to the front of the mouth, and *vice versa*. In the vowels [i, ɛ, æ] the tip and blade of the tongue are pushed forward towards the lower teeth (as can easily be seen in a mirror). This position should be compared with that of the vowel in *father* [ɑ], in which the tip and the blade are drawn much further back in the mouth, away from the outer curve of the teeth. Vowels made in this position are called *back vowels*; those of the former group are *front vowels*. An intermediate position, with the tongue lying fairly flat in the mouth, is that of the *flat vowels*, one of the commonest of which is the unstressed vowel in *father* [ə].

(3) The muscles of the tongue, like those of other parts of the body, can be relaxed and limp, or made tense so that the whole of the tongue becomes stiffened and as it were "hunched up." This difference in the tongue muscles has a distinct effect on the character of a vowel. Vowels made with a loosely-held tongue are called *slack*; those for which the tongue is tense are called *tense vowels*. Most of the English short vowels (e.g. [i, ɛ]) are slack. In phonetic notation slack vowels are usually printed in italic type (underlined in handwriting). (But cf. the Greek ε used for the mid-front-slack.) On the other hand, most of the English long vowels are tense. In French, the tense vowel *é* (in *été*, etc.)

can be compared with the slack *è*, *ai*, *ê* (in *père*, *faites*, *être*, etc.).

(4) The lips can be kept in their normal position, or be pushed forward or protruded so that a kind of funnel is formed. The vowels produced with the lips in the latter position are called *round* (or *rounded*) vowels, as compared with the *unrounded* vowels. The degree of rounding varies partly with the height of the tongue, high vowels being usually more rounded (that is, with the lips more protruded) than low vowels. An example of a definitely rounded vowel in Standard English is the [u] of *boot*, etc. In English, rounding is less pronounced than it is in some other languages; in fact, English speakers move the lips very little.

In some languages a mid or low vowel is pronounced with the degree of rounding usually associated with a higher vowel. Thus, the German *ü* (in such a word as *grün*, green) is a mid-front vowel, but the amount of rounding is that usually found in a high vowel. This is called *over-rounding*. The opposite tendency is called *under-rounding*.

Rounding, and the sensations belonging to it, can be easily practised in the case of the front vowels. If the high-front [i] is pronounced clearly and steadily, and if the lips are then pushed forward *without any movement of the tongue* and without any break in the articulation, the sound will change to that of the French *u* [y]. A similar effect can be produced by curling up the forefinger and thumb so as to leave an aperture the size of a farthing, placing this against the lips, and pronouncing the vowel [i]. The opposite process, that of retraction of the lips to their normal position, and the consequent change in vowel quality, are called *unrounding*.

Vowel Quantity

Vowels can vary in the actual length of time taken to pronounce them. *Long* vowels are maintained longer than *short* vowels. The comparative length of a vowel is called its quantity. The terms *long* and *short* are purely relative, since what is a long vowel in one language may, in fact, be short in comparison with the long vowels of another language. There are, of course, intermediate stages between *long* and *short*. The quantity of vowels often varies under different conditions of stress. Moreover, there is a tendency in English for vowels to be pronounced longer before a voiced consonant than before a voiceless consonant. The vowel of *bad* [bæd], for instance, is longer than that of *bat* [bæt], though the quality remains the same.

The vowels of Standard English are pronounced with the soft palate kept tense and pressed against the back of the pharynx, so that the nose-passages are closed. Some languages and

dialects, however, pronounce certain vowels with the soft palate relaxed and the passage to the nasal cavity opened; this tendency can occur also as an individual defect in speakers of Standard English.

French has several nasal vowels: e.g. [ã] in *ange*; [œ] in *vin*; [õ] in *son* "sound" etc.

A diphthong is a combination of two vowels, of which only one is stressed, while the other has little appreciable sonority, the two being

pronounced without a fresh impulse of the breath between them. English diphthongs, at least those of Standard English, are stressed on the first element, e.g. [er] in *make*, which consists of the short [e] followed by a very short slack [ɪ]; this is known as a *falling diphthong*. If the second element is stressed, the result is a *rising diphthong*. The two vowels of a diphthong do not constitute two syllables, since the reduction or increase of sonority is steady.

LESSON 5

Pronunciation of Front Vowels

HAVING considered the various factors that influence the quality of a vowel, we can proceed to discuss the vowels and diphthongs of English, comparing them where necessary with those of other languages. We shall divide them primarily into three groups according to the position of the tongue - front, back, flat - and study the sub-divisions in each of these categories.

In Unstressed Syllables

First, then, the *Front Vowels*. English, French, and German all have a short *i* sound, but all three are slightly different from one another: the French vowel (e.g. in *fini* "finished") is tense [i], the other two slack; for the English [ɪ] the tongue is slightly lower than for the other two; this lowering is particularly noticeable in the unstressed [ɪ], e.g. in the second vowel of *city* [sɪti]. (An alphabetic notation does not permit of the indication of these slight variations, except by the use of diacritics). Further, in the French vowel there is a tendency to draw back the corners of the lips, thus lengthening the mouth-opening horizontally. Apart from its having become slack, the short high-front has not changed since the earliest Old English, except under certain limited conditions. In some Modern English dialects other than Standard English, the vowel [ɪ] of Middle and Early Modern English has been definitely lowered to [e], and we have such pronunciations as [pɛn, tɛl] for *pin, till*.

We must here particularly note the frequency of the high-front [ɪ] in unstressed syllables. It is represented in ordinary spelling by so many different spellings that a special warning is perhaps necessary. It is written *e*, for instance, in the common plural, and the third person singular ending, -*es*: bushes, horses, dances, etc., pronounced [ʊz]; similarly, in the unstressed initial syllables *en-, ex-, etc.*, e.g. enjoy, exact [ɪndʒoɪ, ɪgzækt]. The same pronunciation is disguised under the spellings -*ate*, -*age*, etc., in *private, prelate, cottage, marriage*, etc.; [praɪvɪt], etc. This *i* in unstressed syllables,

which has been in use since the 15th century or earlier, is less common now than formerly, being sometimes replaced by [ə]. The ending -*on* used to be pronounced as [ɪn] by the side of [ən], but this survives now only in *pigeon* ([pɪdʒɪn], also [pɪdʒən]), and more rarely in *cushion* ([kʌʃɪn] beside [kʌʃən]).

The vowel of English *meet, sea, brief*, etc., is tense, like most of the English long vowels; it is represented by the symbol [iː]. There is a slight tendency to diphthongise this before *l*, in words such as *field, seal*, resulting in a pronunciation which can be represented as [iːld, siːl], the second element of the diphthong being very short.

With the tongue and the lower jaw somewhat lowered, one produces the mid-front vowel [e]. This represents the English vowel (as in *pet*), which is slack. The tense variety is heard in the diphthong [er] of words such as *make, made* [meɪk, meɪd]. One does not use a long [iː] or [ɛː] (slack or tense) in Modern Standard English. French has both varieties: the tense (written *ê*) in such words as *été*, the slack (written *è, ai, or é*) in *être, fautes, mère*, etc. German has a very long tense mid vowel in *schu, lehren*, etc.

A Very Distinctive Vowel

Still lower in the mouth is the vowel [æ] as used in Received Standard English in *man, hat, candle*, etc., usually slack, and varying slightly in length, like other vowels, according to the consonant which follows it. This is a very distinctive vowel, and often causes difficulty to foreigners. Many English dialects do not use it at all (having a back vowel in place of it), but it is not difficult to acquire if the mouth is opened wide enough, and the tongue pushed well forward. Some dialects, including that of some Cockney speakers, tend to raise this vowel to the mid position, pronouncing [pɛn] for *pan*, [keb] for *cab*, and so on.

In the front vowels which we have so far discussed, the lips are kept in the normal position. The varieties which are produced by rounding (that is, by the protrusion or pushing

forward of the lips) do not occur in Modern English, but are found in many other languages. The rounding of the high-front [i] produces the vowel which in French is written *u* (phonetic symbol [y]), as in *du, lune, plume*, etc. This vowel, both long and short, used to exist in English; the symbol *y* was used for it before the Norman Conquest. It should be practised by putting the tongue in the position for [i] or [i], and then pronouncing this with the lips alternately protruded and retracted.

The mid-front [ɔ] is heard in French in words such as *peu, feu, le*. It is produced by

pushing the lips forward while the tongue is in the position for [ə]. The low-front-round [ɔ] also occurs in French, in *coeur, soeur*, etc. As is usually the case with low vowels, the rounding is only slight.

The different varieties of front vowel can be arranged in tabular form, those not occurring in English are enclosed in brackets.

	Unrounded	Rounded
High	ɪ, (i)	(y)
Mid	e, ɛ	(ɔ)
Low	æ	(ɑ)

LESSON 6

A Phonetic Alphabet

THE student will by now be familiar with many of the ordinary phonetic symbols.

It is time to begin to practise reading and writing in phonetic script, which is an excellent way of fixing the attention on the sounds of the language as distinct from the ordinary spelling, which is so often misleading. We give here a list of the symbols necessary for writing English, including those used in previous Lessons, and those representing sounds still to be discussed. It has already been pointed out that these symbols are not suitable for the representation of minute distinctions in sound. Three persons speaking slightly different dialects may each pronounce a slightly different variety of [æ], for instance, but each of these can be represented by the symbol [æ] so long as the speaker keeps to his own dialect, so that æ represents the same sound each time it is used.

For purposes of comparison, and because they are likely to be encountered in many text

books, the appropriate symbols of the International Phonetic Association's alphabet are given alongside the modified practical alphabet used throughout this Course.

CONSONANTS

		I.P.A. Symbol
p	as in <i>pin</i>	p
b	as in <i>bin</i>	b
t	as in <i>tin</i>	t
d	as in <i>din</i>	d
k	as in <i>kin</i>	k
g	as in <i>begin</i>	g
f	as in <i>fin</i>	f
v	as in <i>van</i>	v
θ	as in <i>thin</i>	θ
ð	as in <i>this</i>	ð
s	as in <i>sin</i>	s
z	as in <i>zove</i>	z
ʃ	as in <i>shan</i>	ʃ
tʃ	as in <i>church</i>	tʃ
ʒ	as in <i>measure</i>	ʒ
dʒ	as in <i>judge</i>	dʒ
r	as in <i>rou</i>	r
w	as in <i>win</i>	w
hw	as in <i>whin</i>	hw
l	as in <i>lumb</i>	l
r	as in <i>run</i>	r
m	as in <i>men</i>	m
n	as in <i>no</i>	n
ŋ	as in <i>sung, sink</i>	ŋ
h	as in <i>hurt</i>	h

VOWELS

	I.P.A. Symbol
ɪ	as in <i>pin</i>
ɛ	as in <i>men</i>
æ	as in <i>man</i>
ʊ	as in <i>put</i>
ɑ	as in <i>bat</i>
ɒ	as in <i>not</i>
ə	as in <i>away, father</i>
ɪ	as in <i>meet</i>
ɑ	as in <i>father, part</i>
u	as in <i>boot, rule</i>
ɔ	as in <i>port, saw</i>
ʊ	as in <i>hurt</i>
eɪ	as in <i>make, maid</i>
aɪ	as in <i>my, mine</i>
aʊ	as in <i>now</i>
oʊ	as in <i>no, nose</i>
ɪə	as in <i>near</i>
eə	as in <i>fair, bear</i>
ʊə	as in <i>poor, sure</i>

As has already been pointed out, many speakers of Received Standard do not use the voiceless w represented by [w], but pronounce [w] in both *wine* and *whine*, etc. This pronunciation is used in the passages transcribed in these Lessons. With regard to the vowels, it should be said that for the diphthong [uə] in *poor, sure*, and similar words many good speakers use the vowel [ʊə], [ɔə], etc.

EXERCISES

The following easy exercises should be read over two or three times by the student, so that he can familiarise himself with the look of the symbols as they occur in groups. A key is given at the end of the next Lesson, though not many difficulties are likely to arise in deciphering it. Notice that no capital letters are used, since these constitute separate symbols which can be used for different sounds.

- (A) *siŋ ə ʊŋ əv sɪkspəns,*
ə pəkɪt fʊl əv raɪ,
fɔːr ən twenti blækbɔːdz
beɪkt ɪn ə paɪ.

(Note the *r* of [fɔːr], pronounced before the vowel of the following word.)

- wɛn ðə paɪ wəz ɔʊpənd*
ðə hɔːdz bɪɡən tə sɪŋ.
wɔːnt ðæt ə deɪntɪ dɪf
tə sɛt bɪfɔːr ə kɪŋ ?

(B) *ðə san ʃən ən ðə fām-jād, meɪkɪŋ ðə*
kəbl-stoʊnz lʊk braɪt ən pɒlɪft. ðə daks kwækt
slɪpɪlt frəm ðə pɒnd, ən ðə heɪnz klakt æz ðeɪ
sɔːlt lɛɪzɪlt fɔː gɪeɪnz əv kɔːn. ði ɔʊld dæg lɛɪ ən
ðə dɔː stɪp, wɪð wən aɪ fæt, ən ði ɔːðə hɔːf-ɔʊpən,
wɔːtʃɪŋ fə vɪzɪtəz. ðə kaʊz wə mænʃɪŋ ɪn ðə
fɛɪd əv ði ɔʊk-trɪz.

(The definite article *the*, as will be observed, is pronounced [ðə] before consonants, [ði]

before vowels. The verb *were* is [wə] when unstressed, [wɛə] or sometimes [wɔː] when stressed.)

(C) “*veri wɛl, aɪ əm matʃ əblaɪdɪd tu jʊ. maɪ mæðər ɪz dɪləɪtʃʊli wɛl ; ən dʒeɪn kɔːt nɔʊ*
kɔʊld læst naɪt. hau ɪz mɪstə wudhaʊs ?—aɪ əm
sou glæd tu hɪə sətʃ ə gud əkaʊnt. mɪsɪz wɛstən
tɔʊld mɪ ju wə hɪə.--ou, ðen, sɛd aɪ, aɪ mast rən
əkrɔːs (or əkrɔːs) ; aɪ əm fɔː mɪs wudhaʊs wɪl
əlaʊ mɪ dʒast tu rən əkrɔːs ənd ɪntrɪt hæ tu kam
ɪn ; maɪ mæðə wɪl bɪ sou veri hæpi tə sɪ hæ—ənd
nau wɪ ə sətʃ ə naɪs pɑːti, ʃɪ kænət rɪfjʊz.” (Jane Austen)

(D) Write the following in phonetic notation ; letters printed in italics (indicating slack vowels) should be *underlined*. Care must be taken to pronounce each *phrase* before writing, *not* each individual word, as this would disguise the effect of stress or its absence.

I have heard some people say that Mrs. Wallis can be uncivil and give a very rude answer ; but we have never known anything but the greatest attention from them. And it cannot be for the value of our custom now, for what is our consumption of bread, you know ? Only three of us besides dear Jane at present—and she really eats nothing—makes such a shocking breakfast. I dare not let my mother know how little she eats—so I say one thing and then I say another, and it passes off. But about the middle of the day she gets hungry, and then there is nothing she likes so well as these baked apples. (Jane Austen)

LESSON 7

Back Vowels in Standard English

THE chief *Back Vowels* in English are rounded, the whole series of high, mid, and low not existing in this language in the unrounded form. The high-back-round [u] in *boot*, *soon*, etc., is fairly common in Standard English. The tongue is arched, well back in the mouth, and raised high towards the roof. The lips are well forward, and the space between them is small. Some Standard speakers tend to diphthongise this long vowel very slightly, especially before a voiced consonant, e.g. in *moon*, *food* ; the second element of the diphthong consists of a very short slack *u*, and may be represented as in [mūʌn]. The short slack *u* occurs in many English words, usually preceded by a lip-consonant, e.g. in *full*, *put*, *butcher*, *wool*, *wolf*, and also *sugar*. (In *wolf* and *wool*, *o* is merely a graphic symbol for a sound which has always been *u* in English.) This vowel is a little lower in position and slightly less rounded than the English long *ū*.

In the mid-back position we have the rounded vowel *o*, which as a tense vowel occurs commonly in German, but in English only as the first element of the diphthong in *go*, *nose*, *know*, etc. The second element is a high-back-slack-

round vowel, the tongue being raised and the lips more rounded, so that [o] becomes raised to [u], giving the diphthong [ou]. Some local dialects of English do not have a diphthong in these and similar words, but pronounce [gō, nōz, nō], etc. Very close to this *o* in position but perhaps very slightly lower, and without any lip-rounding, is the vowel of the Standard English *but*, *son*, *cover*, etc. This is tense ; the symbol for it is [a]. It is derived historically in most cases from an earlier [u], and most of the English provincial dialects have the same vowel in *but*, *mud*, etc., as in *bull*, *pull*, etc., though the two groups are differentiated in Standard English. The *o* in the spelling of *son*, *mother*, *love*, *some*, etc., dates from the 13th century, when Anglo-Norman scribes used this letter instead of *u* for the sake of clearness in the neighbourhood of *n*, *m*, and certain other letters which were apt to be confused with *u* in the handwriting of the period.

The next back vowel to be considered is that heard in Standard English *father*, *hard*, *glass*, *half*, etc. This is lower than the vowels [o] and [a], and may be described as mid-back, lowered ; it is usually somewhat advanced. Unlike most

English long vowels it has only slight tenseness. The tongue is nearly flat. The Cockney variety of this vowel is considerably lower, and gives the impression of a sound not unlike [ɜ]. The vowel [a] occurs in Standard English as a short vowel in the diphthongs [ai, au], as in *high* and *how*, though it is usually very slightly more advanced than the long vowel in the former case and slightly retracted in the latter. Some local dialect speakers (notably in Cockney English) tend to use a front vowel [æ], in both these diphthongs, producing [æi] and [æu]. The vowel [a] occurs (sometimes slightly advanced) in many dialects of Northern English in words where Standard English has [æ].

The vowel [ɔ] of *caw*, *caught*, *lord*, etc., is a low-back-tense vowel, long and definitely rounded. The tongue is well back in the mouth, the tip lower than the back. The lowest tongue-position in Standard English is that adopted for the vowel [ɒ] of *not*, *hot*, *long*, etc. This is short, slack, and has very slight rounding. Some Scottish and American dialects have a raised variety of this vowel, and have unrounded it completely, pronouncing [tʌm, hʌt], etc., for *Tom*, *hot*.

The first element of the diphthong [oɪ] in *boy*, *noise*, is between mid and low, and is more rounded than that of *not*, etc., but less so than that of *caw*. It is probably usually tense.

EXERCISE I

TRANSCRIBE FROM PHONETIC NOTATION. *ai* hæv ən ɔlmoust fɛmɪnɪn pɑːʃələri fɔːr ould tʃʌmə. wɛn ai ɡou tu si ɛni greɪt haʊs, ai ɪnkwaɪə fɔː ɔ tʃaɪnə klɔːzɪt, ən(d) nekst fɔː ɔ pɪktʃə ɡæləri. ai kænət dɪfend ɔi ɔdər əv prɛfərəns, bat bai seɪŋ, ɔæt wi hæv ɔl sam teɪst ɔr ədə ɔv tʊ eɪnfənt ə deɪt tu ədmɪt əv aʊə rɪmɛmb(ə)rɪŋ dɪstrɪktli ɔæt ɪt wɔz ən əkwədʒ wɔn. ai kæn kɔl tə maɪnd ɔə fɑːst pleɪ, ænd ɔə fɑːst ɛxɪbɪʃən, ɔæt ai wɔz teɪkən tʊ; bat ai əm nɔt kənʃəs əv ə taɪm wɛn tʃʌmə dʒʌz ən sɔsɔz wɔr ɪntrɔdʒɪst ɪntu maɪ ɪmædʒɪnɪʃən.

ai hæd nou rɪpagnəns ɔen—wai ʃud ai nau hæv?—tʊ ɔəuz lɪfl, lɪlɪs, æzə-tɪŋktʃəd ɡrɒntɛskɪs, ɔæt andə ɔə nouʃn əv mɛn ænd wɪmɪn, flout əbaʊt, ənsækəmskraɪbd bai ɛni klɪmənt, ɪn ɔæt wɔld bɪfɔː pɑːspɛktɪv—ə tʃaɪnə tɪ-kap. (Charles Lamb.)

EXERCISE II

TRANSCRIBE INTO PHONETIC NOTATION: I am fond of passing my vacation (I believe I have said so before) at one or other of the Universities. Next to these my choice would fix me

at some woody spot, such as the neighbourhood of Henley affords in abundance, on the banks of my beloved Thames. But somehow or other my cousin contrives to wheedle me once in three or four seasons to a watering-place. Old attachments cling to her in spite of experience. We have been dull at Worthing one summer, duller at Brighton another, duller at Eastbourne, a third, and are at this moment doing dreary penance at—Hastings!—and all because we were happy many years ago for a brief week at Margate. That was our first sea-side experiment, and many circumstances combined to make it the most agreeable holiday of my life. We had neither of us seen the sea, and we had never been from home so long together in company. (Charles Lamb.)

KEYS TO EXERCISES IN LESSON 6

- (A) Sing a song of sixpence,
A pocket full of rye,
Four and twenty blackbirds
Baked in a pie

When the pie was opened
The birds began to sing.
Wasn't that a dainty dish
To set before a king?

(B) The sun shone on the farm-yard, making the cobble-stones look bright and polished. The ducks quacked sleepily from the pond, and the hens clucked as they searched lazily for grains of corn. The old dog lay on the doorstep, with one eye shut, and the other half-open, watching for visitors. The cows were munching in the shade of the oak-trees.

(C) "Very well, I am much obliged to you. My mother is delightfully well; and Jane caught no cold last night. How is Mr. Woodhouse?—I am so glad to hear such a good account. Mrs. Weston told me you were here. Oh, then, said I, I must run across; I am sure Miss Woodhouse will allow me just to run across and entreat her to come in; my mother will be so very happy to see her—and now we are such a nice party, she cannot refuse."

(D) "ai əv hʌd sam pipl seɪ ɔæt mʌsɪz wɔlɪs kæn bɪ ʌnsɪvɪl ən ɡɪv ə vɛrɪ rʊd ʌnsə; bat wi hæv nəvə noum ɛnɪpɪŋ bat ɔə greɪtɪst ɛtɛnʃən frɔm ɔəm. ænd ɪt kænət bɪ fɔː vɛljʊ əv aʊə kastəm nau, fə wɔt ɪz aʊə kənsampʃən əv brɛd, ju nou? ɔunli prɪ əv əs—bɪsaɪdz dɪə dʒeɪn ət prɛznt—ænd ʃɪ ɪəli ɪts nɛpɪŋ meɪks sʌtʃ ə ʃʊkɪŋ brɛkfəst. ai deə nɔt lɛt maɪ mʌdə nou hau lɪfl ʃɪ ɪts—sou ai seɪ wɛn pɪŋ ən ɔen ai seɪ ɔnəðə, ænd ɪt pɑːsɪz ʃɪ. bat əbaʊt ɔə mɪdl əv ɔə deɪ ʃɪ ɡɛts hʌŋɡrɪ, ænd ɔen deə ɪz nɛpɪŋ ʃɪ laɪks sou wɛl æz ɔɪz beɪkt æplz."

LESSON 8

The Frequency of Flat Vowels

The final vowel series is that known as *Flat Vowels* -- intermediate in position between Front and Back, so that the tongue lies fairly flat in the mouth, without any definite movement towards the front or back. The vowel [æ] of *bad, heard, word*, etc., belongs to this class. It is in Standard English a long tense vowel, slightly higher in position than the vowel [a]. There is no lip-rounding. It has many variants in provincial dialects, where it sometimes occurs in a shortened form. It is almost always derived historically from one of the groups *u, e, ur*, in which special developments of the vowel took place before the consonant *r*, the latter subsequently disappearing (except in word-groups where the *r* is followed by an initial vowel in the next word, e.g. Sir Arthur [səi ətʃə]).

The Commonest Vowel

The most commonly occurring of all vowels in the English language is the mid-flat [æ], made with the tongue a little higher (slightly less mouth-opening) than [a]. This may be developed from almost any vowel or diphthong in an unstressed syllable, cf. those in *scarlet, canary, circus, purpose, porpoise, nation, ponipous*. It is also used in colloquial speech for the endings or prefixes spelt with *er, or, ur*, etc. (e.g. *forget, father, warrior, soldier, western, standard*, etc.), though in slower, more studied diction a rather longer and sometimes lower vowel may be used. This is especially the case when a voiced consonant follows the weak vowel, as in such words as *uttered, differed*, and in slow and careful speech in the prefix *per-*, e.g. *perturbed, permit (vb), persistent*.

The vowel [æ] in a very weak syllable tends to disappear altogether in prefixes in rapid speech, or between voiceless consonants to become a *whispered vowel* (see Lesson 4), e.g. in the first syllable of *potato, catastrophe*, etc.

Prefixes containing an originally round vowel are often pronounced with rounding, and with a moderately long vowel, in rather studied utterance, in place of the full reduction to [æ]. Such "obscured" or "reduced" vowels, varying in different speakers in length and quality (tenseness, amount of rounding, etc.) may be heard, for instance, in *obey, comparison, possess, polite*, etc. Cf. also the varying quality of the vowel of the suffix *-ful*, which may be pronounced [-fʊl, -fəl], or, with the vowel disappearing completely, [-f], according to the rate and the preciseness or otherwise of the utterance, as in *careful, thoughtful, beautiful, awful*, etc.

EXERCISE I

TRANSCRIBE FROM PHONETIC NOTATION:

afte sam fædə kɒnvæseɪʃən bɪtwɪn ðə mæstər ənd mɪstrɪs ɪlətɪv tu ðə sɒkses əv mɪstə skwɔːzɪz tri:p, æn(d) ðə pipl hū əd peɪd, ən ðə pipl hū əd meɪd dɪfəlt ɪn peɪmənt, ə ɪən sɔːvənt ɡæl brɔt ɪn ə ɪəksə paɪ ən səm kould bɪf, wɪf biŋ set əpən ðə teɪbl, ðə bɔɪ smaɪk əpɪəd wɪð ə dʒag əv eɪl.

mɪstə skwɔːz wəz ɛmptɪŋ hɪz greɪt-kəʊnt pɒkɪts əv leɪz tə dɪfrənt boɪz, ənd əðə smɔl dɒkjumənts, wɪf ɪ əd brɔt dʌm ɪn ðəm. ðə bɔɪ glɑːnst, wɪð ən æŋksəs ən tɪmɪd ɪkspreɪʃən, æt ðə peɪpəz, æz ɪf wɪð ə sɪklɪ hoʊp ðæt wən əmən ðəni mʌnt rɪlət tu hɪm. ðə lʊk wəz ə vɛrɪ peɪnfl wʌn, ənd wɛnt tə nɪkələsɪz hæt ət wʌns ; fər ɪt təʊld ə lɔŋ ənd vɛrɪ sæd hɪstəri.

ɪt ɪndʒʊst hɪm tə kənsɪdə ðə bɔɪ nɪðɪ ətɛntɪvli, ənd hɪ wəz sɔːprɪzɪd tu əbzəɪv ðɪ ɪkstrɔːdnəri mɪksʃəɪ əv ɡæmənts wɪf fɔːmɪd hɪz dres. ʃɪðəu hɪ kʌd nɔt əv bɪn lɛs ðən ɛtɪn ɪ nʌntɪn ɪəz ɔʊld, ənd wəz ʃɪl tə ðæt eɪdɪz, hɪ wɔɪ e skelɪtən sɪt, sʌtʃ əz ɪz ʃʊzəli pʊ əpən vɛrɪ lɪl boɪz, ənd wɪf, ðəu mʌst əbzəɪdli ʃɛt ɪn ðɪ ʌmz ənd legz, wəz kwʌnt wʌd mʌf fə hɪz ətɛnjuetɪd frɛm, (Charles Dickens)

EXERCISE II

TRANSCRIBE INTO PHONETIC NOTATION:

"What are you bothering about there, Smike?" cried Mrs. Squeers; "let the things alone, can't you?"

"Th!" said Squeers, looking up. "Oh! it's you, is it?"

"Yes, sir," replied the youth, pressing his hands together, as though to control, by force, the nervous wandering of his fingers; "is there

"Well!" said Squeers.

"Have you did anybody has nothing been heard—about me?"

"Devil a bit," replied Squeers testily.

The lad withdrew his eyes, and, putting his hand to his face, moved towards the door.

"Not a word," resumed Squeers, "and never will be. Now, this is a pretty sort of thing, isn't it, that you should have been left here all these years, and no money paid after the first six—nor no notice taken, nor no clue to be got who you belong to? It's a pretty sort of thing that I should have to feed a great fellow like you, and never hope to get one penny for it, isn't it?" (Charles Dickens.)

KEYS TO EXERCISES IN LESSON 7

(I) I have an almost feminine partiality for old china. When I go to see any great house, I enquire for the china closet, and next for the picture gallery. I cannot defend the order of

preference, but by saying, that we have all some taste or other of too ancient a date to admit of our remembering distinctly that it was an acquired one. I can call to mind the first play, and the first exhibition, that I was taken to ; but I am not conscious of a time when china jars and saucers were introduced into my imagination.

I had no repugnance then—why should I now have?—to those little, lawless, azure tinctured grotesques, that under the notion of men and women, float about, uncircumscribed by any element, in that world before perspective a china tea-cup.

(II) *ai* æm fənd əv pāsɪŋ maɪ vəkɛɪʃən (*ai* biliv *ai* əv sed sou bɪʃ) æt wən ɔr ədər əv ðə

jūnɪvɜːsɪtɪz. nekst tə ðɪz maɪ tʃoɪs wʊd fɪks mɪ æt sam wʊdi spɔːt, sətʃ əz ðə nɜːbəhʊd əv henlɪ əfɔːdz ɪn əbændəns, ən ðə bæŋks əv maɪ bɪləvɪd tɛmz. bʌt sʌmbəʊ ɔr ədər maɪ kəzn kɒntrɪvz tə wɪdl mɪ wəns ɪn prɪ ʃ fɪ sɪznz tu ə wɔːtərɪŋ-plɛs. ould ætæfsmənts klɪŋ tu hə ɪn spɔːt əv ɪkspɪərɪəns. wɪ hæv bɪn dæl æt wæðɪŋ wən samə, dælər æt bræɪtən ənədə, dəlɪst æt ɪstɔːn, ə pæd, ænd ər æt ðɪs moʊmənt dʊɪŋ drɪŋ pɛnəns æt—heɪstɪŋz! ænd ʃl bɪkəz wɪ wə hæpɪ mɛnɪ jɪəz əɡəʊ fər ə brɪf wɪk æt mægət. ðæt wəz aʊ fæst sɪ-saɪd ɪkspɛɪmənt, ænd mɛnɪ sɪkəməstənsɪz kəmbaɪnd tə meɪk ɪt ðə moʊst əɡrɪəbl həlɪdɪ əv maɪ laɪf. wɪ əd naɪdər əv əs sɪn ðə sɪ, ænd wɪ əd nəvə bɪn frəm hoʊm sou lɔŋ təɡɪdər ɪn kəmpəni.

LESSON 9

Stress in English Speech

The proper placing of the stress—that is, the relative force with which a syllable is uttered—in words, phrases or sentences, plays an important part in the speaking of English, and often gives difficulty to foreigners. Various degrees of stress may be recognized, of which it will be sufficient to consider here *Strong*, *Medium*, and *Weak*. The effect is the same whether the stresses occur within the same word (e.g. unhelpfully, where the acute accent denotes the strong, the grave the secondary stress, and the syllables unmarked are weak), or in a phrase or sentence (e.g. what time is it?).

Monosyllables

The stress of monosyllables is relative only to the other words in the sentence, and causes them to vary considerably in their pronunciation according as they are relatively emphatic or unemphatic. Such words may be classified as (1) pronouns ; (2) articles ; (3) auxiliary verbs ; (4) prepositions ; (5) conjunctions.

(1) Those pronouns consisting of a monosyllable ending in a long vowel (he, we, you, etc.) are shortened except in emphatic positions (the resulting vowel may be either tense or slack) ; those beginning with an aspirate lose this when weakly stressed, and when the preceding word ends with a consonant ([hɪ sed i wəz goʊɪŋ əweɪ]) ; those containing a diphthong do not change much, but *their* [ðeə] is sometimes reduced to [ðə] ; the pronunciation [mɪ] for [maɪ] is now obsolete in ordinary speech, though it may still be heard occasionally on the stage.

(2) The articles, *a*, *an*, *the* when strong [ə, æn, ði] ; when weak, [ə, ən, ðə, ðɪ].

(3) The auxiliary verbs *am*, *are*, *was*, *were* ; *have*, *has*, *had* ; *can*, *could* ; *will*, *would* ; *shall*, *should* ; *must*, frequently have their vowels

reduced to [ə], becoming [əz, ə(r), wəz, wə ; hæv ; kən ; ʃəl], etc. Those beginning with *h* often lose the aspiration when preceded by a word ending with a consonant. Further, *am*, *is*, *have*, *has*, *had*, *can*, *will*, *shall*, *should*, may lose their vowels completely, becoming [m, z, v, z, d, kn, l, ʃl, ʃd] respectively. *Be* and *do* may have the vowel shortened.

(4) With regard to the prepositions : *at*, *for*, *from*, *of*, *to*, *into*, strong forms are used at the end of a sentence : what have you come for [fɔ] ? where are you going to [tu] ? Cf. good-for-nothing [fɔ], at home [ə], for ever [fɔr evə], from England [frəm], king of England [ɔv]. The weak form [tə] of *to*, *into*, is used only before consonants ; [tu] is retained before vowels.

(5) Finally, the conjunctions *and*, *as*, *but*, *than*, *that*, often have the vowel weakened to [ə], and *or*, *nor* are shortened. *And* frequently loses its vowel altogether, [ɪnd], and sometimes its second consonant, becoming [n], especially before another point consonant.

Dissyllables

Dissyllables may have the stress on the first syllable (falling stress, e.g. táble, hórses), or on the second (rising stress, e.g. áway, forbíd), or on both syllables equally (level stress, e.g. sɛa-side, thírteen). The first is the most common type in English ; the last is found chiefly in compounds. Some words vary between falling and level stress according to their position in the sentence, having level or rising stress when used independently, but falling stress when used attributively. Cf., for instance, "come inside" with "the inside walls" ; "the sky is overhead" with "the overhead railway" ; "it is thrée o'clock" with "the thrée o'clock tráin" ; "he is thírteen" with "it is thirteen míles" ; "she is a

princéss " with " Princess Anne "; " fought at Wáterlloo " with " Wátérloo Bridge "; " the scout was únséen by him " with " únseen enemies. "

The distinction between a noun and a verb in some cases consists in a difference of stress. Compare the nouns *récord*, *fórecast*, *présént*, *contráct*, *cóncert*, *tórmént*, *súrvéy*, with the verbs *recórd*, *forecást*, *présént*, *contráct*, *convért*, *tormént*, *survéy*. Note especially that the variation in stress is usually accompanied by a difference in the vowel sounds (e.g. [rékôd, rikôd; préznt, prizént]). Similarly, a few adjectives are distinguished from nouns having rising instead of falling stress: *minúte* (adj.), *minute* (n.); *expért*, *éxpert*; *instínet*, *ínstínet*, etc.

A certain number of dissyllables may be heard pronounced by good speakers with either falling or rising stress. Such are *extant*, *adult*, *contents*, and some foreign words, *garage*, *bureau*, etc.

It is impossible to give definite general instructions as to the stressing of words of three or four syllables, except that the usual tendency in Modern English is to throw the stress back to the first or second syllable. Cf. *cóntemplate*, *cóncersant*, *démonstrate*, *dérelíct*, *súbaltern*, *ántiquary*, *áristocrat*, *cóntroversy*, *déspicable*, *fórmidable*, *équitable*, *hóspitable*; and, with the stress on the second syllable, *ancéstral*, *facsimile* *fanátic*, *tribúnal*, *vagáry*, *artíficer*, *építome*, *indécorous*, etc. Many (scientific) four-syllabled words of Greek origin are stressed on the second syllable, e.g. *teléphonist*, *photógraphy*, *polýgamy*, *philósophy*, *zoólogy*, *astrónomy*, etc. Some four-syllabled words may be pronounced with the stress on either the first or the second syllable, e.g. *centénary* [sént/nəri, sentínəri], *contemplative*, *miscellany*.

Words of five syllables (most of them are adjectives derived ultimately from Latin) usually take the chief stress on the first syllable if this is the stem of the word and not a prefix, in which case the stress falls on the second syllable. Cf. *ámbulatory*, *dédicatory*, *réspiratory*, *véterinary*, with *declámatory*, *derógatory*, *inérorable*, *irréparable*, *prépáratory*.

Finally, words of six or more syllables usually contain two strong stresses, or have a marked secondary stress, e.g. *advisability*, *intercom-múnícation*, *únpárdonableness*, *infériórity*.

EXERCISE I

TRANSCRIBE FROM PHONETIC NOTATION :

ðə splendə fôlz ən kâsl wôlz
 ənd snəʊi sɑmɪts ould in stôri :
 ðə ləŋ laɪt feɪks əkrəs ðə leɪks,
 ənd ðə waɪld kætəreɪkt lɪps ɪn glôri.
 blou, bjûgl, blou, set ðə waɪld ɛkəʊz flaiɪŋ,
 blou, bjûgl ; ɑnsər, ɛkəʊz, daiɪŋ, daiɪŋ, daiɪŋ.

EXERCISE II

ðɛn kwɪkli rouz sɑ bədɪvə, ənd ræn,
 ænd lɪpɪŋ daʊn ðə rɪdʒɪz laɪtli plændʒd
 əmən ðə buɫrɑf-bædz, ənd klatʃt ðə sɑd,
 ənd strɔŋli wɪld ənd prʊ ɪt. ðə greɪt brænd
 meɪd laɪtnɪz ɪn ðə splendər əv ðə mʊn,
 ənd flæɪŋ raʊnd ənd raʊnd, ənd wɪld ɪn ən aɪf.
 ʃɒt laɪk ə strɪməʊ əv ðə nəðən mɒn,
 sɪn weə ðə mʊvɪŋ aɪlz əv wɪntə ʃɒk
 baɪ naɪt, wɪð nəɪzɪz əv ðə nəðəm sɪ.
 sou flæɪt ənd fɛl ðə brænd ɛkskælɪbə :
 bæt ɛə hɪ dɪpt ðə sɑfɪs, rouz ən əm
 kləʊdɪd ɪn waɪt səməɪt, mɪstɪk, wəndəfʊl,
 ənd kɒt hɪm baɪ ðə hɪlt, ənd brændɪʃt hɪm
 prɪ taimz, ən drʊ hɪm əndər ɪn ðə mɪə.

EXERCISE III

TRANSCRIBE INTO PHONETIC NOTATION :

On either side the river lie
 Long fields of barley and of rye,
 That clothe the wold and meet the sky ;
 And thro' the field the road runs by
 To many-tower'd Camelot ;
 And up and down the people go
 Gazing where the lilies blow
 Round an island there below,
 The island of Shalott.

By the margin, willow-veil'd,
 Slide the heavy barges trail'd
 By slow horses ; and unhail'd
 The shallop flitteth silken-sail'd
 Skimming down to Camelot :
 But who hath seen her wave her hand ?
 Or at the casement seen her stand ?
 Or is she known in all the land,
 The lady of Shalott ?

EXERCISE IV

The Danube to the Severn gave
 The darken'd heart that beat no more ;
 They laid him by the pleasant shore,
 And in the hearing of the wave.

There twice a day the Severn fills ;
 The salt sea-water passes by,
 And hushes half the babbling Wye,
 And makes a silence in the hills.

(Tennyson.)

KEYS TO EXERCISES IN LESSON 8

(1) After some further conversation between the master and mistress relative to the success of Mr. Squeers's trip, and the people who had paid, and the people who had made default in payment, a young servant girl brought in a Yorkshire pie and some cold beef, which being set upon the table, the boy Smike appeared with a jug of ale.

Mr. Squeers was emptying his great-coat pockets of letters to different boys, and other small documents, which he had brought down

in them. The boy glanced, with an anxious and timid expression, at the papers, as if with a sickly hope that one among them might relate to him. The look was a very painful one and went to Nicholas's heart at once; for it told a long and very sad history.

It induced him to consider the boy more attentively, and he was surprised to observe the extraordinary mixture of garments which formed his dress. Although he could not have been less than eighteen or nineteen years old, and was tall for that age, he wore a skeleton suit, such as is usually put upon very little boys, and which, though most absurdly short in the arms and legs, was quite wide enough for his attenuated frame.

(11) "wət ə ju b ɒðəriŋ əbaʊt ðeɪ, smaɪk?" kraʊd mɪsɪz skwɪəz; "lɛt ðə ɪnɪz ələʊn, kənt ju?"

"ei!" sɛd skwɪəz, lʊkɪŋ ap. "ou! ɪts ju, ɪz ɪt?"

"jes, sɪ," rɪplaɪd ðə jʊv. prɛsɪŋ ɪz hændz tægeðə, əz ðəu tə kəntroʊl, bʌt fɔs, ðə nəlvəs wəndrɪŋ əv ɪz ɪŋgəz; "ɪz ðeɪ—"

"wel!" sɛd skwɪəz.

"hæv ju—dɪd enɪbədɪ—hæz nəpɪŋ bɪn hɪd—əbaʊt mɪ?"

"deɪl ə bɪt," rɪplaɪd skwɪəz tɛstli.

ðə læd wɪðdrʊ hɪz aɪz, ənd, pʊtɪŋ ɪz hænd tu ɪz feɪs, mʊvd təwɔːdz ðə dɔ.

"nɒt ə wɔːd," rɪzjʊnd skwɪəz, "ən nəvə wɪl bi, naʊ, ðɪs ɪz ə prɪtu sɔt əv ɪn, ɪznt ɪt, ðət ju ʃəd əv bɪn lɛft hɪə ʃl ðɪz jɔːz, ən nou mənɪ peɪd əftə ðə fɔst sɪks nɔ nou noumɪs teɪkən, nɔ nou klɪ tə bɪ gɒt hɪ ju bɪlɒŋ tu? ɪts ə prɪtu sɔt əv ɪn ðəi aɪ ʃəd hæv tə fɪd ə greɪt felou laɪk ju, ənd nəvə hoʊp tə gɛt wən prɪnt fɔr ɪt, ɪznt ɪt?"

LESSON 10

Sounding of Consonant Groups

WHEN two or more consonants follows each other without any intervening vowel, a change in one or both sometimes occurs. Not infrequently, in a phrase, or within a word (though this is not common in English), the same consonant is repeated, as in the compounds *book-case* [bʊk-keɪs], *hop-pole* [hɒppəʊl], or in the phrases *a biG Garden*, *a reD Dog*. When this is the case with a stop consonant, the small explosion which normally follows the release of the tongue or lips is absent in the first of the pair, the tongue, etc., being simply retained in position nearly twice as long as usual. This produces what is known as a long consonant. If a completely finished consonant is pronounced for each of the pair, with a puff of air in the middle, a peculiar, jerky, unnatural effect will be the result. Such long consonants are common in the middle of words in some languages (e.g. Italian), and used to be so in English several centuries ago, but except in the case of compounds, English long or double medial consonants have now been reduced to single sounds, though often written as two (e.g. *sinner*, *selling*).

If two consonants made in the same part of the mouth, and differing only in the presence or absence of "voice," follow each other—as in *sit down*, *hold tight*—the tongue does not move in passing from one to the other, but the vocal chords are contracted (as in *t d*) or relaxed (as in *d-t*).

Assimilation (the attraction of one sound to another) often takes place in consonant groups. Thus the [z] of *news* [njuːz] is often unvoiced to [s] before the voiceless [p] in the compound *newspaper*, while [s] of *goose* becomes voiced before [b] in *gooseberry*. Similar to these changes is the alternation of *s* and *z* (voiceless

and voiced) in the ending of the plural of nouns, and of the third person singular of verbs—*s* being used after a voiceless consonant (e.g. [kæts, hoʊps, dʒæmps]), *z* after a voiced consonant or a vowel (e.g. [dɒgz, ranz, hɔːsɪz]). This alternation is a very old one.

Nasal consonants are easily affected by the character of neighbouring sounds. Thus the prefix [ɪn] may become [ɪŋ] before [k], e.g. *income* sometimes becomes [ɪŋkəm], *pincushion* becomes [pɪŋkʃən], and *handkerchief* (with loss of *d*) [hæŋkətʃɪf]. Similarly, the point nasal *n* may become a lip nasal before a lip consonant (e.g. *infant*, *infamous*), though this is rarer in present-day English, but not uncommon a few centuries ago, as is shown by spellings such as the seventeenth century (occasional) *Bambury* for *Banbury*; *imphant*, etc.

Finally, it should be noted that many examples of consonantal loss, such as that of the *t* in *often*, *soften*, *castle*, *listen*, *Christmas*, etc., of the *d* in *Wednesday*, *Windsor*, *handsome*, etc., are by no means recent, but date back as early as the Middle English period, and that the loss of consonants at the end of a word or in groups was far commoner among good speakers up to the end of the eighteenth century than it is to-day.

EXERCISE 1

TRANSCRIBE INTO PHONETIC NOTATION:
Call you me fair? That fair again unsay.
Demetrius loves your fair: O happy fair!
Your eyes are load-stars; and your tongue's
sweet air
More tunable than lark to shepherd's ear,
When wheat is green, when hawthorn buds
appear.
Sickness is catching; O, were favour so,

Yours would I catch, fair Hermia, ere I go ;
My ear should catch your voice, my eye your
eye,
My tongue should catch your tongue's sweet
melody.

Were the world mine, Demetrius being bated,
The rest I'll give to be to you translated.

(*A Midsummer Night's Dream*, I, i.)

EXERCISE II

TRANSCRIBE INTO PHONETIC NOTATION : Let us now praise famous men, and our fathers that begat us. The Lord hath wrought great glory by them through his great power from the beginning. Such as did bear rule in their kingdoms, men renowned for their power, giving counsel by their understanding, and declaring prophecies : leaders of the people by their counsels, and by their knowledge of learning meet for the people, wise and eloquent in their instructions : such as found out musical tunes, and recited verses in writing : rich men furnished with ability, living peaceably in their habitations : all these were honoured in their generations, and were the glory of their times. There be of them, that have left a name behind them, that their praises might be reported. And some there be that have no memorial : who are perished as though they had never been ; and are become as though they had never been born ; and their children after them. But these were merciful men, whose righteousness hath not been forgotten.

KEYS TO EXERCISES IN LESSON 9

(I)

The splendour falls on castle walls
And snowy summits old in story :
The long light shakes across the lakes,
And the wild cataract leaps in glory.
Blow, bugle, blow, set the wild echoes flying,
Blow, bugle ; answer, echoes, dying, dying,
dying.

(II)

Then quickly rose Sir Bedivere, and ran,
And leaping down the ridges lightly plunged
Among the bulrush-beds, and clutched the
sword,
And strongly wheeled and threw it. The great
brand
Made lightnings in the splendour of the moon,
And flashing round and round, and whirled in an
arch,
Shot like a streamer of the northern morn,
Seen where the moving isles of winter shock
By night, with noises of the northern sea.
So flashed and fell the brand Excalbur :
But ere he dipped the surface, rose an arm
Clothed in white samite, mystic, wonderful,
And caught him by the hilt, and brandished him
Three times, and drew him under in the mere.

(III)

ən aɪðə saɪd ðə rɪvə laɪ
lɒŋ fɪldz əv bæli ʌnd əv raɪ,
ðæt kləʊd ðə wəʊld ʌn(d) mɪt ðə skaɪ :
ʌn(d) prʊ ðə fiəld ðə raʊnd ranz baɪ
tu məni-taʊəd kæmɪlət ;
ænd əp ʌn daɪn ðə pipl gou,
geɪzɪŋ wə ðə lɪlɪz bləʊ
raʊnd ʌn aɪlənd ðeə bɪləʊ,
ðɪ aɪlənd əv fɒlət.

baɪ ðə mædʒɪn, wɪləʊ-veɪld,
slaɪd ðə hevrɪ bædʒɪz treɪld
baɪ sləʊ hɔːsɪz ; and ʌnheɪld
ðə fæləp flɪtɪp sɪlkən-seɪld
skɪmɪŋ daɪn tu kæmɪlət :
bat hʊ hæp sɪn hə weɪv hə hænd ?
ðɪ æt ðə keɪsmənt sɪn hə stænd ?
ðɪ ɪz fɪ nɒm ɪn ʃɪ ðə lænd,
ðə leɪdɪ əv fɒlət ?

(IV)

ðə dænjʊb tu ðə sevrən geɪv
ðə dʌkənd hæd ðæt bɪt nɒu mɔː ;
ðeɪ leɪd hɪm baɪ ðə plæzənt fɔː,
ænd ɪn ðə hɪdɪŋ əv ðə weɪv.
ðeə twaɪs ə deɪ ðə sevrən fɪlz ;
ðə sɒlt sɪ-wɔːtə pæsɪz baɪ,
ænd hæfɪz hæf ðə bærlɪŋ wɔː,
ænd meɪks ə səɪləns ɪn ðə hɪlz.

KEYS TO EXERCISES IN THIS LESSON

(I)

kəl ju mɪ feə ? ðæt feər æɡem ʌnsɛt
dɪmɪtriəs lævz jɔ feə : ɒn hæpɪ feə !
jɔr aɪz ə laʊd-staɪz ; and jɔ tæŋz swɪt əs
mɔ tʃɪnəbl ðəm læk tu fɛpədz ɪə,
wɛn wɪt ɪz grɪn, wɛn hɔʃən bɑdʒ əpɪə.
sɪkɪs ɪz kætʃɪŋ ; ɒn, wə sevrə sɒn,
jɔz wʊd aɪ kætʃ, feə hɪlmɪə, eɪ aɪ gou ;
maɪ ɪz fʊd kætʃ jɔ voɪs, maɪ aɪ jɔl aɪ,
maɪ tæŋ fʊd kætʃ jɔ tæŋz swɪt mɛlədɪ.
wə ðə wɔld mæn, dɪmɪtriəs bɪŋ beɪtɪd,
ðə rest aɪl grɪv tu bɪ tu jʊ trænslɛtɪd.

(II)

lɛt ʌs naʊ preɪz feɪməs mɛn, and ʌs fæðəz
ðæt bɪɡæt ʌs. ðə lɔd hæp rɔt greɪt glɔəri baɪ
ðəm prʊ hɪz greɪt paʊə frəm ðə bɪɡɪnɪŋ. sɑtʃ
əz dɪd beə rʊl ɪn ðeə kɪŋdəmz, mɛn rɪnaʊnd fɔ
ðeə paʊə, gɪvɪŋ kaʊnsl baɪ ðeər ʌndəstændɪŋ,
ʌn(d) dɪkleərɪŋ prəfɪsɪz : lɪdəz əv ðə pipl baɪ ðeə
kaʊnslz, and baɪ ðeə nɔlɪdz əv lɔnɪŋ mɪt fə ðə
pipl, waɪz and kləʊkwənt ɪn ðeər ɪnstrækʃənz :
sɑtʃ əz faʊnd ʌt mjʊzɪkl tʃʊnz, and rɪsaɪtɪd
vɔsɪz ɪn raɪtɪŋ : rɪtʃ mɛn fəɪnɪʃt wɪð əbɪlɪtɪ, lɪvɪŋ
pɪsəbl ɪn ðeə hæbɪtɛfənz : ʃɪ dɪz wɔr ʌnəd ɪn
ðeə dʒenərəɪʃənz, and wə ðə glɔəri əv ðeə taɪmz.
ðeə bɪ əv ðəm, ðæt hɔv leɪt ə neɪm bɪhaɪnd ðəm,
ðæt ðeə preɪzɪz maɪt bɪ rɪpɔtɪd. and sʌm ðeə
bɪ ðæt hæv nɒu mɪmɔriəl ; hʊ ə pɛrɪʃt əz ðəu ðeɪ
həd nevrə bɪn ; and ə bɪkʌm əz ðəu ðeɪ həd nevrə
bɪn bɔn ; and ðeə tʃɪldrən ʌftə ðəm. baɪ dɪz
wə mɔsɪfʊl mɛn, hʊz raɪfənsɪs hæp nɔt bɪn
fɔɡɔtɪn.

DRAMA

B*OTH the theoretical and the practical aspects of drama are considered in this Course. An historical and critical account of drama from its early beginnings to modern times is followed by an explanation of the work of the play producer and stage manager, and Lessons on the technique of acting and make-up for stage and screen.*

For an extended treatment of the history of English drama, the Course on ENGLISH LITERATURE (Vol. 2) should be consulted. Some notes on foreign drama will also be found in the Course on FOREIGN LITERATURE in Vol. 4. Ancient drama is reviewed in CLASSICAL LITERATURE in Vol. 1.

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The Drama as Life's Looking-Glass

THE drama dates from remote antiquity, covering, in Europe, over twenty-five centuries of development. It has been likened to a selective and focusing mirror of life. As its essence is representation, drama is also a story interpreted to an audience by actors. It is not confined to the stage, but, governed by different technical methods, may be presented on the screen and on the air. As literature it is considered in appropriate detail in the Courses on Classical, English, and Foreign Literature (see Vols. 1, 2, and 4 respectively).

Great drama depends not only on being theatrically effective, but also on the powerful appeal of its characters and on the subtlety of its psychological development. Shakespeare's genius was such that he was able to create hosts of characters who are all convincing personalities, full of human passions and inconsistencies. They are unexpected in their words and actions, just as people are in real life, and yet again just as real people - they retain their own individualities.

Drama is an Art

The drama, being an art, possesses its own laws, conventions, and methods of presenting its material. It has also its secrets only partially revealed by intuition and penetrated by talent. Artists in all its branches need a

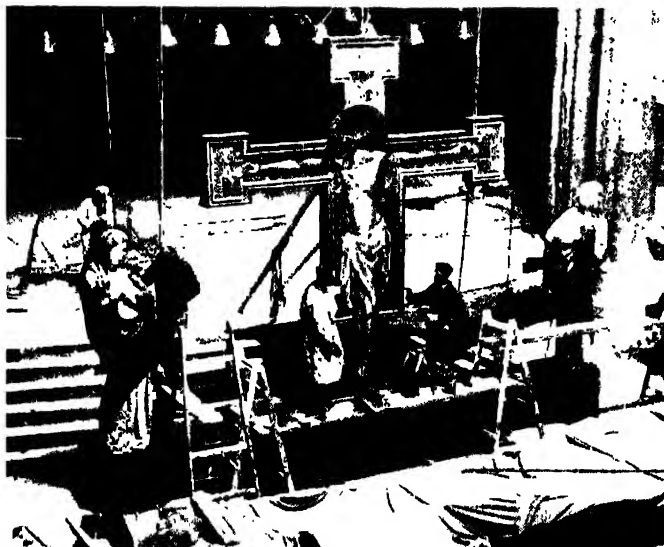
sense of its forms and of proportion, together with a knowledge of the laws of its nature, to find a means of clear expression. They also need discipline, because the work of the theatre or of the studio is team work.

Even sufficient concentration to read drama or to study its speech intelligently requires discipline. To take active part in production or performance requires discipline plus technical skill. As dramatist, director, actor, or mechanical expert, the individual is a member of a team. There must be a common meeting ground of rules and technique, whatever the special selection of form or experiments in treatment.

The play must be written so that it will be dramatically effective in presentation, and with due regard to its physical or mechanically-aided medium. It must be directed by one who understands not only the play and players, but also how to secure the co-operation of any experts required in lighting, costume, scenery, or in cinematography or engineering. The actors engaged are both skilled technicians and expressive artists. They require to master the technique of acting, to exercise imagination, and to demonstrate artistic sense as interpreters. Radio plays excepted, the drama is seen as well as heard, and therefore dramatic art combines others, such as music, movement, characterisation, decoration, and make-up.

Apart from the particular there is need of the general cultured outlook, in view of the growing international reciprocity in dramatic art and undertakings. This has been developed and intensified by the organization of theatrical presentations on an international basis. British professional companies tour Commonwealth countries, a Shakespearean company visits Denmark annually, players from France and other European countries give seasons in London and visit the Provinces. West End productions are subsequently seen on Broadway, and American productions in London.

In dramatic art, while technical competence is essential if success is to be more than a freakish or haphazard occurrence, creative and original minds are necessary to provide fresh incentive and variety of treatment in play



TRANSFORMATION SCENE. When "The Miracle" was produced in London, the whole of the interior of the Lyceum theatre was transformed into a cathedral. Workmen are seen erecting the huge crucifix.

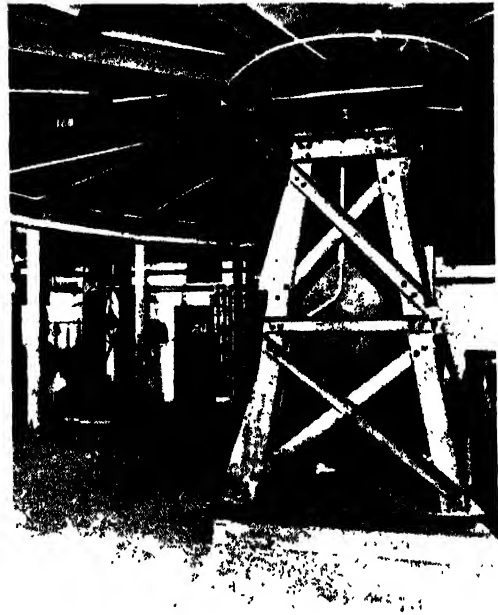
and production. The drama, being instinct with life, cannot be allowed to become rigid in classical conventions, or it is robbed of vital freedom. The actor without individuality is no more than a puppet. Invention is an integral part of the true theatrical artist.

The New and the Old

Whether we will or not, we are urged on in dramatic art, as in life, by the perpetual struggle between the new idea and the old. A nice sense of proportion is requisite. No art is furthered by those devotees who declare that they want an endless repetition of the moribund conventions of yesterday, or by those who vehemently demand a complete break with the past. Interesting archaic revivals and occasional upheavals are a different matter. The first have historical value apart from the high or amusing forms of art they may preserve and recall to us; the latter are a drastic remedy for mental rigidity. Technical progress has produced a host of new problems and possibilities, a wider field of invention and experiment. Apart from their own value as facilities and means of production, these things provide incentives to artistic imagination by their influence on our lives and thought.

During the 20th century scientific knowledge applied in theatrical productions resulted in the introduction of revolutionary changes, especially the revolving stage and mechanical devices that make possible the rapid and effective setting and striking of scenes. The engineer and mechanical expert have an active part in the newer forms of dramatic presentation on the screen and on the air. These are definitely mechanised art, and come into their own by way of new technique, and not merely by imitation of stage forms and conventions that may have been long in existence.

The public reached by plays on the screen and by the radio is incalculably vast, and few



UNDERSIDE OF REVOLVING STAGE, 34 ft. 6 in. in diameter, installed at the Royal Court theatre, Liverpool. The winding gear and motor are seen at lower left.

Courtesy of Lift and Engineering, Ltd.

will deny that both are powerful forces in national life. Apart from entertainment value, people remember more, and often learn more, from dramatic representations than from lectures or talks. The primary purpose of art is to give perceptive and intellectual pleasure. Drama in mechanised form can be regarded as art, because it is capable of giving pleasure by quickening the imagination and also enriching the understanding by giving a synthesis of life's experience.

LESSON 2

Dramatic Forms and the Emotions

DRAMATISTS write plays to be acted, not primarily to be read as books. In fact, drama does not really live until it is interpreted by actors to an audience, though many plays in prose and poetry continue to exist as works, some as masterpieces, of literature. When reading such plays one should try to realize the actor's part and the effect of the drama on the audience.

Plays fall into two great categories, tragedy and comedy. From these have developed so many offshoots that only the briefest classification is possible here. There are problem

dramas which are not tragedies; and amusing plays which have too serious a plot, or in which too much sympathy is required for their individually human characters, to rank as pure comedies. The farce is an exaggerated comedy. All these are often described and billed simply as "plays," while the word "drama" is reserved for melodrama or romantic drama.

Modern sub-titles have tended to be descriptive. Bernard Shaw, for example, labelled *Man and Superman*, in which he reflected his opinions on creative evolution, "A Comedy and a Philosophy." *Back to Methuselah*, in



HAMLETT. Richard Burton in the role of the prince of Denmark, in a production by the Old Vic company at Elsinore.

which he re-stated some of his views, he called "A Metabiological Pentateuch." Stanley Houghton, an outstanding member of what was known as the Manchester school of dramatists, wrote *The Younger Generation*, which he termed "A Comedy for Parents." Sean O'Casey, an outstanding contributor to the Abbey Theatre, Dublin, used "A Wayward Comedy in Three Acts" as a sub-title; the American dramatist Eugene O'Neill wrote *Lazarus Laughed*, which he described as "A Play for an Imaginative Theatre."

Comedy and Tragedy

Apart from these admixtures and those primitive forms—miracle plays and moralities—which are sometimes respectively classified as belonging fundamentally to tragedy and comedy, there are four main types of drama from which the theatre rarely deviates: comedy and farce on the humorous side, tragedy and melodrama on the serious side.

Comedy proper may be broadly divided into the comedy of manners and the comedy of intrigue, humorous and often also romantic. In the comedy of manners the foibles of the characters express the foibles of the society wittily satirised by the dramatist. Congreve's *The Way of the World*, Sheridan's *The School for Scandal*, Oscar Wilde's *The Importance of Being Earnest*, and *Our Betters* and *The Circle*,

by W. Somerset Maugham (sometimes referred to as the 20th-century Congreve), are outstanding examples. In the comedy of intrigue, the fun depends not on foibles but on the tangles and laughable situations in which the characters are involved. *Twelfth Night* and *A Midsummer Night's Dream* are Shakespearean examples of this kind.

From its earliest days to the 18th century, tragedy, in dealing with its profound and sombre themes, employed in their characterisation persons of exalted rank. Comedy revelled in lowlier spheres (Shakespeare made exceptions), until the comedy of manners poked fun at the rich and fashionable. When the domestic tragedy came into prominence in the 18th century, evoking sympathy for the woes of the humble, it was realized that no such distinctions on the score of rank could be made between tragedy and comedy.

The comedy dramatist, in desiring to create an atmosphere of brightness and merriment, does not probe the sensibility of the audience by demands of deep commiseration for his characters. Tragedy inspires with its truth to life, its heroism and its sadness, its temporary brightness in contrast to its profound depths, its terror and pity, strength and weakness; takes all this content into account and enriches our experience. Comedy also does the last, but it ignores the fullness of life. Rationally, it rejects calamity and catastrophe. When we sympathise we do not wish to laugh; and we sympathise with characters who, though their appeal is universal, are revealed to us as individual human beings and not as types. Comedy characters are types.

Shakespeare's genius stressed the psychological conflict of his tragic characters as opposed to the outward conflict. Ibsen stressed both character and atmosphere in the development of his tragic themes. Tchekhov gives us phases of life in which the human soul is revealed in terrible loneliness.

Professor Ronald Peacock writing in the '40s (*The Poet in the Theatre*) contended that the moral standards of our time are so chaotic that we seem to have lost any traditional basis of tragedy. He concluded:

The peculiar distinction of tragedy and comedy is that they are hand in hand with life, yet free from it, making the gross material itself yield the image of refinement. It is the happy paradox of their character to combine the sensuous pleasure of living with the moral pleasure of aspiration. With a miraculous virtuosity they reconcile the two halves of our nature and become the sign of civilized feeling.

Melodrama and Farce

Tragedy's poor relation, melodrama, was originally a serious drama with lyrical melodies. Now melodrama denotes a sensational play of the "thriller" or romantic type. It relies on artificially constructed plot and exciting

incidents, without the logical development or universal appeal of tragedy. It is built up on material facts and movement.

Well-constructed melodrama and farce both have good entertainment value. The harm of the former is that in too sensational a guise it dopes the perceptive capacity of the onlooker by blunting imagination. Farce literally means

stuffing, and the humorous form of drama to which the name was applied in the 18th century was stuffed with ridiculous situations and extravagant fun. It still depends on these and, for success, on characters, or rather caricatures, which are droll enough types to afford scope for star comedians to invest them with their own personalities.

LESSON 3

What is Drama's Mainspring?

THE sphere of the drama is action. Conflict—physical, mental, and emotional—is its motive power and cardinal part. Drama arises when any person or persons are consciously or unconsciously opposed to some other person or persons, fate, force, or environment. The dramatic structure of a play contains a theme, a basis of situations and incidents for the plot or story, the characters, and the dialogue, with directions serving as an interpretation of the dramatist's meaning.

Choice of Theme

The theme or central idea of a play may be suggested from any source. The human concepts which can be used are ever varying. Bernard Shaw's stimulating genius could use frankly religious themes. In his *Saint Joan* and in *Major Barbara* (the chief situation of which is the conversion of an East End "tough" by the Salvationist heroine) he gave such themes vital dramatic force. A lesser playwright might only prove poor taste and poor sense of theatre by the choice of such unpromising subjects.

In a well-constructed play the characters are properly related to the central theme and selected with regard to the various incidents of the framework. In a play with serious psychological development of character, the plot grows—and in good comedy appears to grow—out of the way the story and conflict of actions, ideas, and emotions affect the definite set of characters. The selection first of incidents and a crisis which will hold the construction of the play is essential. In drama the unexpected must happen. When it has happened it must appear logical and inevitable. Drama demands surprises and shocks or crises for its big situations.

In a comedy, even when dealing with apparently normal

characters, besides the constructional incidents there must also be an artificial development of the conflicting elements and of the plot, or there could be no concentrated sequence of amusing events working to the curtains and finale. The art of the comedy dramatist lies in concealing this artificiality.

In melodrama and farce effect is seen without cause. The situations do not unfold the dramatic life of the characters. The conflict in melodrama is the outward clash of the hero with his enemies, and of struggles to get the better of those who have falsely accused the innocent or tricked them into disastrous ways or positions. In farce the conflict sometimes descends to the knockabout, but the same types of conflict are employed as in comedy (or even in tragedy), though with absurd treatment.

In humorous plays conflict between the sexes—for instance, as in *She Stoops to Conquer* and *The Taming of the Shrew*—occurs frequently, and so, too, does that between the



COURT SCENE in "Judgment Day" at the Strand theatre. This play, by Elmer Rice, was described by one critic as "a cutlass and bludgeon attack upon totalitarian justice."



CONFLICT BETWEEN HUMAN AND MECHANICAL FORCES is the concern of Karel Capek's tragedy "R.U.R." This scene shows the victory of the robots. The conflict ends with the destruction of the human race by the mechanical robots man had invented and made to serve him.

Courtesy of the Embassy Theatre, Swiss Cottage, photo, J. W. Debenham

isolated individual (who yet stands for a type) and the family or society at large. Somerset Maugham's play *The Breadwinner* is an example of high comedy in which the father is in conflict with the family, who regard him as a money-making machine. *The Captain of Köpenick*, a play by Carl Zuckmayer (film and stage versions), in which an ex-convict disguised as an army captain hoaxes the entire town, is an example of the individual conflict against society. *Peace In Our Time*, a melodrama by Noel Coward, presented an idea of what could have happened if Germany had won the Battle of Britain. *The Love of Four Colonels*, a play by Peter Ustinov, introduces, in Germany, a four-power commission of colonels (English, French, Russian, American) discussing problems related to a hill castle, in which there is the Sleeping Beauty, and subsequently these four inside the castle where they function as a four-power commission on love and man's view of woman. "As an evening 'in all directions,'" commented one critic, J. C. Trewin, "it boxes a majestic compass." *The Linden Tree*, by J. B. Priestley, has been appraised as "the best domestic play of our time." It tells the story of a vice-chancellor of a university who disapproves of Professor Linden's liberal and independent mind, but for the playwright himself "the play is not only the story of one man; it symbolises also the struggle in Britain, the nation's fight to work a passage from the dark." *Judgment Day*, by the American playwright Elmer Rice, in production proved to be, as was aptly stated (by Ernest Short in *Theatrical Cavalcade*), a cutlass and bludgeon attack upon totalitarian justice, its success being rooted in the ensemble rather than in any

individual member of the cast.

Bridie's *Holy Isle*, adopting the Shavian manner, shows the ills of modern society transposed into a remote historical setting.

Modern serious plays are often concerned with industrial or social problems, also developed by conflict between the individual and the group, or between classes. In tragedy the conflicts are between physical or mental forces, or both. They may be between persons, or between persons and Fate as in the Greek dramas. They may be between human and mechanical forces, as

in Karel Capek's tragedy *R.U.R.* The outcome of this conflict was the extermination of man by the mechanical robots he had invented and made to serve him.

In Elizabethan tragedy there is the inward conflict moving with the outer conflict. The seeds of destruction are within the consciousness of the character. A difference in the selection of characters commonly observed in tragedy and comedy is that in tragedy one or two figures are selected who by their tremendous individuality dominate the play and engross the interest of the audience; in comedy, as the humour depends on interplay of characters, there are parts almost equally important.

Dramatic Dialogue

In drama, dialogue is marked by its compression. It must always mean something, because the dramatist's characters have to make themselves and the story of the play clear within a strictly limited space of time. In a realistic play the dialogue must appear to the audience natural; a feeling of boredom is created in a modern comedy scene if conversation is stilted.

There are three main styles of dialogue in drama: (a) realistic, which creates the effect of natural prose conversation; (b) poetic, which is in rhymed verse, as, for example, in the serious and romantic passages of many Shakespearean plays; (c) blank verse, the most important gradation between rhymed verse and prose. Shakespeare's use of prose and verse was planned to give effect to particular scenes, characters, and for contrast. As a rule he used prose for the expression of comedy, verse for romance and tragic passion.

LESSON 4

The Dramatic Unities

THE drama of ancient Greece developed into maturity in the 5th century B.C.

It was a product of the religious fervour and artistic impulse of the Greek people at the height of their vitality, and it fell into decay with their decadence. The plays were performed at religious festivals in honour of the god Dionysus.

In Athens a state official supervised the productions, and private citizens were obliged by law to finance them. The actors were known as the artists of Dionysus and were held in great esteem. It was later, in Rome, that the status of actors was lowered: they were frequently slaves or down-and-outs hired for the occasion by the manager of the theatre. The Greek dramas were enacted in a large arena. The Romans used a rectangular stage with the conventions of realistic scenery and a curtain.

Besides the first great plays, we also owe to the Greeks the first text-book on drama, the *Poetics* of Aristotle (384-322 B.C.). The influence of this Greek philosopher's work on the drama has continued. Aristotle had before him the magnificent tragedies of the three greatest Greek poets, Aeschylus (525-456 B.C.), Sophocles (495-406 B.C.), and Euripides (480-407 B.C.). The word tragedy was used by the Greeks for all serious poetic drama as opposed to comedy. The latter form was not accorded so high a place in Athenian judgment as tragedy, nor was it so fully represented in Aristotle's time. The chief comedies then existent were those of Aristophanes, which were brilliant political satires and exuberant fantasies. Those of Menander, which developed the most characteristic features of the New Comedy, were not in being till about 320 B.C.

Aristotle's *Poetics*, therefore, deals chiefly with tragedy, and it is the serious drama which has been most influenced by his work. Ideal beauty, clarity of construction, and religious inspiration were the three qualities which, in Aristotle's

opinion, made tragedy great. He was averse to actors being considered more important than the play and to any tampering with the plot in order to provide a finer part for a leading favourite of the period.

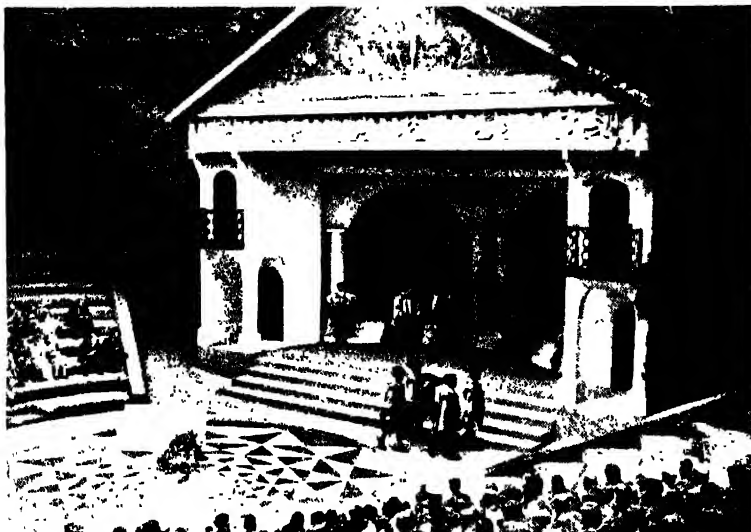
Pity and Terror

He set forth the principle that the plot or action was of more importance than the characters. In accordance with the Greek drama's moral purpose and religious aspect, the course of the tragic action was to be such that the spectators should be so moved with pity and terror that petty emotions were driven out and their souls purged of excess. This is the well-known *katharsis* (purgation). The works of the great poets centred upon personified passions rather than characters.

In spite of the moral aspect, Aristotle makes it clear that all drama is meant to entertain: comedy by its humour, and tragedy by the



HOME OF ATHENIAN DRAMA. The theatre of Dionysus, situated to the south-east of the Acropolis of Athens and actually within the temple precincts, was the centre of dramatic art in Greece. The altar of Dionysus stood in the middle of the semicircular orchestra, and behind this rose the tiers of seats.



MODERN HOMAGE TO ANCIENT GENIUS. Bradfield College in Berkshire has a small open-air theatre built on the Greek plan for dramatic performances by the scholars. This photograph was taken during a presentation of "The Merchant of Venice." The inscription above the portico may be translated as follows: "For these observances are not for the passing moment but abide for ever."

sympathy evoked for the misfortunes of the leading personage; and it was Aristotle who insisted that this leading personage should always be of exalted rank, so that the downfall should be dramatically greater.

Unities of Time, Place, and Action

The most important of his rules are concerned with the dramatic unities of time, place, and action. The first and third of these were formulated by Aristotle, the second developed logically from the first

(1) Unity of time limits the supposed action to the duration of (roughly) a single day. This was a concession, because, in the perfect play, fictional time would in Greek dramatic theory coincide with time taken in representation

(2) Unity of place restricts the action to one general locality. Both these conventions of unity took into account the fact that the chorus—an integral and serious element of Greek tragedy—was in full view of the audience during the entire performance. Although the Greek dramatist took occasional liberties with time, he could not retain any illusion of reality to life if he lengthened it unduly also, with regard to place, it would be difficult to devise excuses for moving the fifteen persons of the chorus to various localities

(3) Unity of action limits the plot to a set of incidents, related as cause and effect, forming an organic whole. This unity presupposes no sub-plot of importance and no admixture of comedy scenes. To Aristotle action was "the vital principle and very soul of drama." The duty of the dramatist

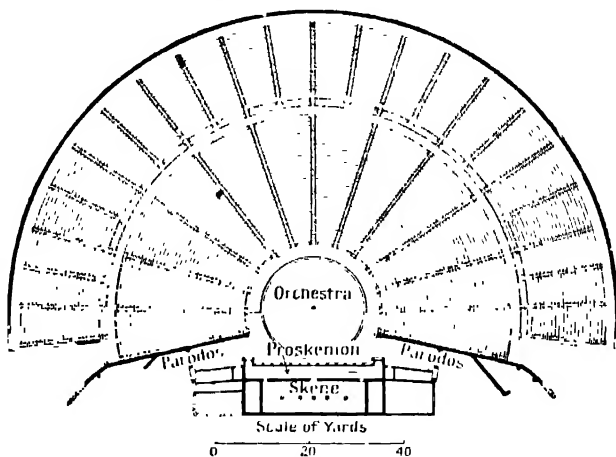
was to arrange the action of the plot so that its situations should display the characters of his people in conflict with the moral force of destiny.

Rome to Modern Times

It was the Roman poet Horace, in his *Ars Poetica*, who first hardened Aristotle's technique of the Greek drama into rigid and infallible principles for all European playwrights. The Greek rules were to be obeyed according to the letter, but not according to the Greek spirit. Aristotle, after an analysis of Greek plays, enunciated his rules from their chief characteristics. These were effective in his time and in the open-air theatres of the Greeks. Horace dogmatically

insisted on the Greek pattern in dramatic construction under other conditions of stagecraft, and required that the unities should be strictly observed in comedy as well as in tragedy.

During the Middle Ages drama was represented only by the non-literary mystery, miracle, and morality plays. With the Renaissance, however, interest in the ancient classics



PLAN OF A GREEK THEATRE. Theatres in ancient Greece were semi-circular structures, with tiers of stone seats rising up from the circular orchestra and having a clear view of the stage (proskenenon and skene). The plan given above is that of the theatre of Epidaurus.

became paramount, and Aristotle's rules were rediscovered and again pronounced by the critics to be perfection of technique.

While Shakespeare and other Elizabethans sturdily disregarded the letter of the classical conventions and all the unities, these were upheld in the 16th and 17th centuries. The classical tradition was revived in Italy by the Renaissance, and France later became the stronghold of drama on Aristotelian lines.

Restriction of Form

The romantic tragedy finally broke away from the neo-classical and dealt deathblows at the strict observance of the unities. William Archer, in his *Play-Making*, points out that the dramatist "who can so develop his story as to bring it within the quasi-Aristotelian 'unities' performs a curious but not particularly difficult or valuable feat," and gives a reminder that observance of the dramatic unities is not, and has not been, the playwright's inescapable obligation. "Though the unities of time and place were long ago exploded as binding

principles—indeed, they never had any authority in English drama—yet it is true that a broken-backed action, whether in time or space, ought, so far as possible, to be avoided." Bernard Shaw in *The New Statesman and Nation* pointed out: "... all the critics, friendly and hostile, took my plays to be so new, so extraordinary, so revolutionary, that *The Times* critic declared that they were not plays at all as plays had been defined for all time by Aristotle. The truth was that I was going back atavistically to Aristotle, to the tribune stage, to the circus, to the didactic Mysteries, to the word music of Shakespeare, to the forms of my idol Mozart, and to the stage business of the great players whom I had actually seen acting, from Barry Sullivan, Salvini, and Ristori, to Coquelin and Chabrine."

To-day many playwrights tend to return to restriction of form, with appreciation of certain dramatic truths at the base of Aristotle's principles. In many modern plays the action is confined to a few days and the same set of scenery suffices throughout.

LESSON 5

Play Production in the Theatre

THE stage play in performance is the sequel to a threefold collaboration: playwright, director or producer, and players. The playwright's intention is expressed in play form. The director or producer (in the contemporary theatre nomenclature is neither uniform nor standardised) must understand that intention and through the medium of the players communicate it to the audience. A playwright may be his own producer: Bernard Shaw was a notable example. An actor may also be both playwright and producer, like Noel Coward and Peter Ustinov. In some eras the theatre is thought of as the playwrights' theatre, as in the Elizabethan Age. At the beginning of the 20th century the theatre in Great Britain was also a playwrights' theatre. By the middle of the 20th century the theatre was a players' theatre brought about by the relative subordination of both playwright and producer to the players' important part in play production. Basically, in actual performance the play is the thing—as physically embodied and interpreted by the actors appearing in it.

Theirs is the responsibility of achieving dramatic success, of effecting direct emotional and mental contact with the spectators. By their art the audience is transported to the world of the play and its characters come to life. The greatest producer, while he can

mould his actors at rehearsal and emphasise every good point for presentation, can do nothing when the play finally comes for judgment before the public.

Large and Small-scale Productions

Star actor-managers usually select and sometimes produce plays in which they appear. But the numerical strength of star actor-managers weakened in the 20th century. Increasingly the professional theatre has become commercialised, with the resultant exertion of big business influences in the choice of plays and other material for theatrical presentation. A big spectacular production has many-sided commercial activities and involves the participation, among others, of scenic designers, costumiers, perruquiers, musicians, and choreographers. On the other hand, repertory theatres, experimental theatres, little theatres, and others are the originators of ingenious and resourceful productions in which scenic effects are subtly suggestive rather than realistic. Some of the most beautiful productions are those of the larger stage, possessing an architectural simplicity and relying on good lighting and colour of dresses and composition of grouping. When the original designs and plans of the professional designer are presented to the scenic artist in the paint-room, they are drawn to a scale of half an inch to the foot and

painted with exquisite precision; scale plan, colour scheme, and direction of light throughout the scene are worked out by the designer, together with accurate details for the backings, which mask doors, windows or staircase turnings in an interior set, and well-conceived proportional plans for any exteriors.

Preliminaries to Rehearsal

Before going into rehearsal a play is usually read to the members of the cast, when a general scheme is commonly adopted and they receive their typed parts, together with instructions about costumes. Sometimes one decoration expert is responsible for all the scenic designs and dressing of the play; as the colour schemes of the costumes must be in accord with those of the scenic background and furnishing, while the whole is affected by the lighting, this specialised decoration is usual in a big production. The dressing of a period play is undertaken by various firms of theatrical costumers, who may supply everything worn, from hats and wigs to shoes or sandals; for modern clothes each actress may be sent to several dressmakers or firms for the various clothes and accessories which complete the stage wardrobe for the particular part.

The producer, having engaged, or approved the engagement of, the members of the cast, has still much to do, apart from general supervision, preparatory to the rehearsals. He has to visualise, work out, and note in his typescript all the movements and "business" of the play. In an immense production with crowd scenes, the producer must use some such method as the fixing of numbered tickets to the costumes of the performers, corresponding to group numbers, the positions and movements of which he has



HARD WORK BEHIND THE SCENES. Planning a production of "Titus Andronicus" for a Shakespeare season at Stratford-upon-Avon are, left to right, the costume designer (Desmond Heeley), the producer (Peter Brook), the costume supervisor (Keegan Smith), and the assistant responsible for settings (Michael Northen).

TEMPLETOWN THESPIANS

THE MILLION MYSTERY

SCHEDULE FOR REHEARSALS

DATE	TIME	PLACE	ACT	REMARKS
Mon., 10th Jan.	7.15	St. Peter's Hall	ALL in ACT 1 Positions, etc.	
Tues., 11th Jan.	7.15	St. Peter's Hall	ALL in ACT 1	
Thur., 13th Jan.	7.15	Corner Café	PRINCIPALS in ACT 2, Sc. 1. Positions	"BARKER," "GEORGE," and SUPERS not required
Fri., 14th Jan.	7.15	St. Peter's Hall	ALL in ACT 2. Sc. 1, Sc. 2. Positions, etc.	FULL ACT 2 Cast
Mon., 17th Jan.	7.15	St. Peter's Hall	ALL in ACT 3. Positions	
Tues., 18th Jan.	7.15	St. Peter's Hall	ALL in ACT 3	
Thur., 20th Jan.	7.15	Corner Café	ALL in ACT 2. Sc. 2 only	Note: "BARKER," "GEORGE" and SUPERS must attend
Fri., 21st Jan.	7.15	St. Peter's Hall	FULL CO. for ACT 1, ACT 2, Sc. 1, ACT 3	ABOVE NOT REQUIRED

Reproduced from "Play Production" by Conrad Carter.

carefully evolved in detailed directions. The numbers are noted, so that at each subsequent rehearsal the correct positions are taken.

Conrad Carter in his book *Play Production* deals specially with rehearsal methods. The schedule of rehearsals varies, he contends, for every play, being governed chiefly by "Nature of play; size of cast; total duration of rehearsal period; evenings when all the cast are available, and when some are not; relative importance, or difficulty, of various scenes; existence of crowd scenes, where supers and numbers of small part players are involved; various local conditions and difficulties." He had in mind the amateur stage, and he gave the section of a typical rehearsal schedule reproduced on the opposite page.

Many producers use a scale-model stage and either scale-model figures or chessmen, or even long glass-headed pins, for working out all movements of the actors scene by scene, writing the directions into the copy of the play as they proceed. This means starting rehearsals with a clearly conceived plan of action.

The Stage Manager

At first rehearsals on the stage of the theatre, substitutes for furniture and necessary properties are used, and chairs are spaced to mark entrances. The stage manager, or the assistant

stage manager, is responsible for the setting of the stage before work begins. The stage manager is also responsible for sending out the calls for rehearsals to the actors. He or his assistant keeps the prompt copy of the play up to date with all stage directions as given by the producer during rehearsals. The stage manager settles dressing-rooms, and is at the head of all the stage staff of carpenters, electricians, and property men. He supervises all setting of scenes when these are ready to be used at rehearsals and subsequently at each performance, unless he delegates his assistant—sees that all furniture and accessories are correct according to designer's plans and producer's arrangements. He also directs the head electrician with regard to lighting of each scene, from the "light plot" containing details of all lights used in the play.

The assistant stage manager has many duties in a big production. Besides being at hand to help with all detail in the setting of scenes and properties, he is required to prompt the actors, and make notes of the times of the rise and fall of the curtains at the beginning and end of each act, both during rehearsals and when the play is running. He may also have special duties with regard to working electrical effects, mechanical changes of scenery, and lighting.

LESSON 6

The Business of Acting

THE good actor, collaborating with the dramatist, interprets and re-creates, in terms of his own personality, the character assigned to him, and so embodies it that he is able to give a fine performance night after night during the run of the play. His voice and body are trained to such obedience that his realization of the part is not consciously hampered by rules of technique; nor is he subject to slackness on the stage. As he finishes his make-up and dressing, he slides naturally into his part. This smoothness and ease are attained by practice, the checking of dramatic theories with experience, the observation of people in all walks and grades of life. In particular, smoothness and ease are attained by the clear individualising thought bestowed on the character, and by the almost subconscious accuracy of words and movements after long and arduous rehearsals. To give a finished performance, the actor must feel absolutely at home on the stage.

The producer, with clear-cut ideas about how each part should be played and how the parts are to be welded into a whole, may give

each member of the cast opportunities to reveal how he or she thinks a character should be portrayed. Another producer may strictly impose his theories and style of interpretation on the cast. Few producers, however, wish to treat their acting teams like puppets, but require their intelligent co-operation from the start. This is difficult to give unless the players know something of the play. When this is a classic, everyone can study advantageously from the whole text; but in the case of a new play, though a few of the principals may be provided with copies, the usual typewritten part distributed to each actor contains merely his own speeches, his cues, and a few of the stage directions which directly affect him.

Much more can be grasped if there is an initial reading of the play to the assembled company. Between this and the first rehearsal each actor studies his lines with a notion of what will eventually emerge from them. Although the playwright has written the play, it does not follow that his presence at rehearsals is desired, or even welcomed. Much depends upon his knowledge of the technicalities of



REHEARSAL WITHIN A PLAY. A scene from Pirandello's "Six Characters in Search of an Author," showing the "characters" (with stage assistants and personnel) rehearsing with substitutes for the stage setting.
Westminster Theatre, photo, Pollard Crowther

production. An actor who has become a playwright has first-hand knowledge of stage requirements and can make constructive suggestions. But a playwright may not know how his script should be handled "behind the scenes" in order to turn it into a public performance; in which case, if he attends rehearsals of his play he is expected to be a spectator rather than a participator.

Special Rehearsals

Sometimes a mere portion of a scene, which will play for a few minutes only, will require special tuition to perfect or take hours to rehearse. A stage duel, for instance, will be arranged by a fencing master; for a struggle, or a free fight, every movement will have to be fixed, numbered, and rehearsed in order.

Placing of furniture—the exact angle of a table or chair—positions of rostrums (platforms which raise portions of the stage), the shape of the stage area, are all marked out from the beginning of production. Mechanical contrivances, such as the revolving stage, require special rehearsing, in order that the actors may be exactly in their right places before the intricate mechanism is started.

Although the actor at his best is the supreme artist of the theatre, even the most experienced defers to the producer in the matter of positions, etc. The producer has worked out all the movements and knows exactly where each actor should be at a given moment in the play,

also how to prevent one actor from masking another during a scene, or from playing too far right or left of the stage so that he is invisible to a portion of the audience in the auditorium.

In order that the actors may become quite at ease with all the business in their parts, the producer as a rule not only arranges substitutes for the furniture at early rehearsals but also for properties used.

The sooner an actor is word-perfect and the more he knows of everyone else's part in his own scenes, the better. It is important that he should learn his cues. Some actors memorise these by writing them out; when they know their own lines, with the check of the cues, they will go right through their parts frequently, as occasion serves, to acquire fluency. On a first night (and afterwards) another player may dry up; it is far less noticeable (to the audience) if the right word can be given on the stage rather than from the prompt corner by the assistant stage manager. Nervousness may lead to the transposition of a sentence, so that a cue is not correctly spoken. The actor who is not cue-bound, but has an intelligent grasp of the scene, will be able to continue it naturally. Other essential things for the would-be actor are to know how to listen; to interpolate naturally; not to emphasise unduly, and not to rant.

After each rehearsal an actor will think over all the points that have been raised. He will try movements, new inflexions in speeches,

practise sitting down at the right word, getting up, opening a door, saying a speech while lighting and smoking a cigarette, or any other stage business introduced. If the play necessitates period costumes, besides being fitted for these he will get into touch with an authority on the period and will pay particular attention to its manners and customs. A dress parade—to see that all costumes are correct—and a

dress rehearsal are the rule for most plays. These rehearsals are carried through more or less like performances thus enabling the cast to acquire the correct rhythm and speed of the play. Any properties used are provided and assembled by the property master and his staff, and are either handed to the actor concerned, if required to be brought on, or placed in position on the stage.

LESSON 7

How the Actor Acquires his Technique

It is often said that there are no rules for acting, and equally often is the importance of training stressed by dramatic critics and authorities. Sydney W. Carroll was emphatic in his *Acting for the Stage* on what can and what cannot be taught. The appropriate use of the voice, the acquisition of the team spirit, stage deportment, different styles of acting—these, he stated, can be taught. What cannot be taught, unless there is a natural gift for the requisite, is, he suggested, “the power of expressing emotion convincingly, sincerity in feeling and its utterance, charm, personal individuality and mesmerism, control over passion and the gift of letting it loose in just measure.” Training undoubtedly aids the actor to express himself; it develops not only the necessary physical qualities, but that mental alertness and power of concentration which are essential to fine performance. There cannot be artists without high technical skill yet the paramount concern for the player must always be with the “life” of the part.

A pleasing voice, good diction, an ear for rhythm, an instinct for phrasing, emotional

power, proficiency in the arts of gesture and of singing—all these things were doubtless as necessary to the success of an artist of Dionysus, playing in ancient Greek tragedy, as they are to the modern actor. The latter—unless specialising in character parts—requires, also, features which will make up well; the Greek wore a mask which covered the head, and not only proclaimed his type of character from afar but was an ingenious amplifier of the voice—useful in the open-air theatre.

Voice Production

Scientific knowledge applied to public entertainment has had considerable effects on the use of the voice by public entertainers. Stage speech, for instance, is different from platform oratory; and sound radio, television, and films have led to new techniques. In films the attention of the eye as well as the ear of the audience is commanded; in sound radio the imagination must be stimulated by the ear alone. This demands a highly specialised technique. To cater for this specialist knowledge, training institutions offer courses of study. The Guildhall School of Music and Drama, in London, for example, has a special studio with first-class apparatus. In its search for fresh talent, and to give advanced students an opportunity to play in radio drama, the British Broadcasting Corporation invites annually representative teams from drama schools of their choice to participate in a competition for the award of two prizes in the form of a six months' contract with the B.B.C. Repertory Company.

A breathing exercise which is useful to increase the air supply to the lungs and, therefore, the volume of the voice, consists in inhaling deeply through the nose, holding the breath for several seconds, and then slowly exhaling it in puffs through the wide-open



STUDENTS REHEARSING RADIO DRAMA. In a suitably equipped studio at the Guildhall School of Music and Drama, London, students of classical, Elizabethan, Restoration, and modern drama have facilities for acquiring the special technique that is necessary for the effective broadcasting of plays.



STAGE ASPIRANTS gain experience at a school of acting such as the Royal Academy of Dramatic Art (R.A.D.A.). Here is a scene from the principal's production of "Mugda," by Hermann Sudermann, in the Vanbrugh theatre of the academy.

mouth, pronouncing "ah" with each puff. Reading aloud great verse or dramatic prose, articulating each word carefully and accurately, then re-reading to get the dramatic meaning, the right inflexions and good phrasing into the sentences, is excellent practice. Unforced comedy largely depends on an instinct for phrasing.

Emotional power can also be cultivated in the study of classical parts. The old argument which Diderot propounded in 1760 in his *Paradoxe sur le Comédien* constantly crops up to-day, as to whether an actor should feel his part at each performance or only simulate feeling. Expressions of 20th-century opinions on this point are illuminating. Marie Tempest stated, "I do think that the actor either does feel deeply, or has felt deeply, and can call up his physical reaction to that distress at will. I've no doubt people vary a good deal, but there either is, or has been, emotion if the actor is to convey any suggestion of it." Dame Sybil Thorndike's husband, Sir Lewis Casson, expressed himself on the subject in this manner: "The actor who, during a performance, *rehears* on living the part is an amateur and an intolerable nuisance to his fellow players. Such an attitude is no more necessary than that a painter should live the paint he is laying on the canvas." Michael Redgrave, an actor with a remarkable range of achievements, in *The Actor's Ways and Means* (the text of the Rockefeller Foundation Lectures delivered at Bristol University, 1952-53), comments, "Thought or emotion may or may not be present—but the

basic will of the actor must be, quite simply, to act: not to think, not to feel, not to exhibitionise, not to make some personal statement—though he may do one or all of these—but to *act*." An actor is unlikely to give a convincing performance unless he is capable of feeling the emotion at some time. The student should therefore endeavour to enter with the utmost realism into the thought and feeling of the character in the particular scene which he is studying. If the part is one which he has seen played well professionally, while remembering the good qualities of the actor it is important to neglect his mannerisms, which will be mere affectations if imitated.

All stage acting must be a slight exaggeration of nature. Unless there is accentuation it

is impossible to reach the audience; instead of appearing natural, the player who tried to give an absolutely true-to-life performance would be ineffective. Truth to nature is as undesirable in acting as it would be in scenery. The art of acting is a subtle distortion of nature so regulated as to be accepted for it. It is therefore important for the student to let himself go in studying a part—to use more facial expression and gesture than is habitual; these can be toned down later when he comes to the most difficult thing of all which is repose, acquired by the elimination of meaningless movement.

In practising gesture, it should be remembered that when pointing, or reaching out for something, the hand *away from* the audience should be used, to obviate stretching the arm across the body. If it is necessary to kneel on one knee this should be the knee *nearer* the audience. In starting to walk across the stage, the foot *away from* the audience takes the first step. When sitting gracefully, though the knees are close together one foot is drawn behind the other. These tricks become subconscious.

Stage Experience

This is obtained in a variety of ways. Some actors start in amateur societies and, achieving success, find a professional opening. Others pay for tuition at a school of acting. In London such tuition can be obtained at the Royal Academy of Dramatic Art, Gower Street; and at the Guildhall School of Music, John Carpenter Street. Other notable London

training institutions are the Central School of Speech Training and Dramatic Art, Royal Albert Hall, and the New Era Academy of Drama and Music, Cavendish Square.

Another method, of which promising and fortunate aspirants can avail themselves, is to be accepted as paying pupils for a season during which they will have opportunities for actual stage work combined with classical tuition.

The beginner anxious to specialise in musical comedy usually applies by letter to the various big managements, stating type of voice, height, and colouring (dark or fair), with a request to be notified to attend the periodical auditions given for the purpose of chorus selection. If the applicant possesses a good voice, looks, and some knowledge of stage dancing, an opening may eventually be found, leading to a chorus or "walking-on" engagement. Singing and dancing practice and lessons should be continued and every effort made to become an understudy. Even if the part is never played, there is the great benefit of understudy rehearsals.

One of the chief differences between acting for the cinema screen and stage acting is that for the cinema any accentuation of expression

or emphasis has to be even more subtly regulated. If it is in the slightest degree perceptible as "acting" the character in the picture introduces an element of unreality. There is no question here of the actor's having to reach his audience; his concern is with the camera, which may be only a few feet away. He has no reciprocity of emotion from an audience to help him in a dramatic scene, but must endeavour mentally to supply this stimulus. He must keep before him an aim expressed by the great French dramatist Corneille: "An actor . . . must give information to the listener . . . through the passion which moves him, and not by means of simple narration."

Training for the screen is a whole-time job. Those who are fortunate enough to obtain an apprenticeship contract in a film production studio have to learn dancing, deportment, elocution (diction is most important for the microphone), the proper way to make up, and some understanding of camera technique as it affects the artist. While most of this training is possible only in the film studio, stage experience is a definitely valuable asset for the screen aspirant.

LESSON 8

Art and Practice of Making-up

THE actor on the stage accentuates his face with make-up for the same reason that he slightly exaggerates nature in his acting to be effective to the audience. Just as he requires greater subtlety of vocal inflexions and gesture in a small theatre than in a large one, so also he needs a less obvious make-up. In a big theatre, to render his facial expressions distinct to those in the more distant parts of the auditorium, his skill lies in broader emphasis of his features rather than in minute finish of realistic detail. The lighting of the modern stage is so regulated that there is a general elimination of facial shadows; the actor has to replace these, and mould the high lights to give the rounded or sharpened effect required for the type of character—whether he wishes to appear fuller or leaner in the face. Some knowledge of drawing or modelling is helpful when he comes to use his own features as the ground-work for a character portrait. Each detail must be thought out.

Should the character be historical, the actor will study

portraits and secure photographs on which to found the requisite likeness. Clothes and their colour will be taken into consideration; a brilliant costume tends to pale the face to insignificance. If a wig is to be worn, the shade



IN A ROMAN GREEN-ROOM. This mosaic from Pompeii is a glimpse behind the scenes in a Roman theatre, showing actors dressing for their next performance. Note the masks which were generally worn by players in Graeco-Roman drama.

National Museum, Naples

of hair will affect the colours of the make-up ; any false hair on the face alters the shape of it. Such accessories as wigs, beards, and moustaches can be specially made and tried at the theatrical wigmaker's, where an expert will shape them according to design or photograph. An actor knows the importance of getting a physical resemblance to a famous character : it is much easier to convince the audience of the realism of the impersonation ; being a part without looking it handicaps the actor and makes it much more difficult for the audience to accept his characterisation.

If an actor is cast for a foreigner of pronounced racial type, he may get a composite idea from several illustrations plus some studies from life. Always he makes it his business to go about among all sorts of people and note characteristic details, not only facial but of hands, build, walk, and general get-up. When a clever impersonator gives impressions of well-known people, he gets a likeness without any pigmentary aid, or at most with the merest suggestion of some characteristic feature. This likeness is achieved by the imitation of mannerisms, tricks of expression, and vocal inflexion.

Natural and Unnatural Make-up

The actor, though he may not be a mimic, uses some such method - "getting into the skin of the part" mentally, as well as adjusting his appearance physically. Knowing the anatomy of his own face, he will be able to decide how little alteration he can do with and yet convey the character with deft touches. This is a far subtler and more realistic method to adopt than a heavy make-up which would hamper the mobility of his features. The modern actor is thus at the far end of the scale of make-up technique from the player in ancient Rome. Broad effect was the sole aim in the Graeco-Roman productions ; no opportunity was given for facial display of emotion when masks were used. Graceful and rapid movements were impeded by the high-heeled and thick-soled buskins worn to exaggerate the normal height of the players.

There are parts in which a definitely unnatural make-up is essential - Caliban, Mephistopheles, or Pierrot, for instance -- and here the imagination of the actor is usually assisted by traditions. Fantastic exaggerations of classical Greek, Oriental or Negro types for musical comedies, astounding creations in grease-paint and wig-craft for vaudeville clowns or eccentric characters in revues - such make-ups are usually arranged and sketched by

the designer of the costumes and décor for the actor to copy.

For other parts, only a straight make-up may be required - that is, one in which the appearance is enhanced and not altered ; every player is supposed to know how to apply such a make-up and also to have a general idea of "character" make-ups. The more experienced the actor, the fewer straight make-ups he employs. He will devise subtle changes for each part he plays.

Make-up Materials

In "intimate" theatres some actors do not use grease-paint ; women apply a foundation cream and powder or liquid powder and rouge, slightly shade their eyes with blue or grey, touch up their lashes and pencil their eyebrows. Men powder or not, according to the type of part, and sometimes use water-colour for artistic effects of old age, or make any lines and wrinkles required with a BBB lead pencil or with a good, pointed brush, size 3 or 4. Any natural indications of lines should be followed.

The usual materials for make-up, however, are grease-paints ; these are obtainable at any theatrical costumier's or wigmaker's in numbered sticks : Max Factor's panchromatic, Nos. 23, 24, 25 for women ; 27 and 28 for men. Suitable foundations for ordinary *fair* make-up for women are 1½, 2, 2½ ; for men 3, 3½, 4, 4½ ; the yellows for a darker type of foundation (sometimes used in combination with one of the lighter flesh tints to give depth of tone) are 4½, 5, 5½, 6 ; 7 is definitely brown, and 8 and 9



DONALD WOLFIT AS MALVOLIO in Shakespeare's romantic comedy "Twelfth Night," presented in the Middle Temple Hall, London. For this occasion it was played against a background consisting of a large book with pages painted to suggest the various scenes.

are brick red ; 8, the browner of the two, gives a rich tanned effect and is used with other colours for dark make-ups, e.g. Mexican or Gipsy ; 13 and 14 are also in the brown range for coloured types of skin ; 12 is black, 20 is dead white ; the reds for ordinary complexions are carmine 1, 2, 3, and 4 for men. Lip rouge is sold in various shades in small pots or in sticks. Lining pencils for shading, lines, etc., are obtainable in black, lake, brown, white, blues, greens, and grey.

Other requisites include cold cream, eye cosmetic or masque for lashes, powder, dry rouge (if required), puff, hare's foot for applying rouge or removing superfluous powder, wet white for hands, arms, and neck, and, for men, spirit gum for affixing any hair pieces to the face, and crêpe hair. The last is sold in all colours of hair and in tight plaits ; a little is unravelled as required, held in front of heat or damped and pressed to take out the crimp, and then put on with spirit gum to hide the edges of ready-made beards or whiskers and prevent an unnaturally hard joining of hair-piece and skin. Crêpe hair is also used alone to make small beards, etc., and to thicken eyebrows. For heavy make-ups in which it is necessary actually to change the contours of the face—as, for instance, when a snub nose has to assume a classical shape or the proportion of Cyrano de Bergerac's, or when chin or cheek-bones have to be built up—nose paste is used. This is really a type of modelling paste and requires careful artistic and economic handling and affixing to have the right effect.

Using Grease-Paint

The secret of the art of make-up lies not so much in the selection of pigments as in an understanding of the laws of light and shade. Before applying a grease-paint make-up the face should be cleansed. A good way of doing this is to squeeze out a pad of cotton wool in cold water, moisten it with an astringent composed of 2 oz. of extract of witch hazel and 6 oz. of rosewater, spread over it a thin theatrical cold cream, and with this wash the face and neck, wiping them afterwards with a soft towel or cleansing tissue. The pores of the skin are protected in this way before applying the foundation colours. The use of two flesh tints, one a shade darker than the other, allows of slight gradations of tone as on the natural face. The grease-paints must be applied sparingly and smoothed over the skin, continuing them well beyond the jaw-line on to the neck to avoid a "mask" effect. Into the foundation, when a perfectly even surface has been obtained, the colours needed for the



MASTERPIECE OF MAKE-UP. In the Metro-Goldwyn-Mayer film, "Goodbye, Mr. Chips," Robert Donat, who took the part of the lovable schoolmaster, grew old with supreme artistry. The first of these stills shows him youthful and eager at the start of his career ; the second, in his early forties ; the third as the sixty-year-old Mr. Chips ; the last, in benign old age, his face furrowed with the years, his hands wrinkled and arthritic.

complexion or shading are then worked with scrupulous care.

The deeper flesh tints are used by either sex for a sunbunt effect with plenty of 9 for colour, or a touch of chrome and carmine 3 if a more brilliant complexion is wanted. A pale make-up is better achieved with 5 (or 5½) and 6 as foundation tints than with 1½ or 2, which would give an insipid appearance. A little practice will determine which grease-paints are best for individual use, although sometimes the colours of a make-up will look right in the dressing-room but not with the particular stage lighting.

Carmine grease-paint should be applied in three dabs, the shape of a triangle, high on each cheek-bone, to soften the contour when the colour is smoothed well into the foundation. For a man's make-up, on a foundation of 5½ and 3, 9 is used for colour, and it is important on a clean-shaven face slightly to indicate the shadow of beard and moustache (where the skin is naturally darkened by hair). Any

exaggeration of the blue-grey shadows will give an unshaved appearance. This is useful for some character parts and it can be emphasised by finely chopped black crêpe hair dusted over a little spirit gum on the face.

Eye Shading and Powdering

Eye shading admits of variations of colour from grey to purple; usually a blue lining pencil is mixed with a little lake. The colour is applied along the lashes and then carefully blurred to shade the lid. With a little paint on the tip of the third finger the space between eyebrow and lid is slightly shaded; so also is the lower lid, to imitate the shadow cast by the lashes. A drawing stump is useful to apply this shadow and to extend the outer corner of the eye with a fine line; a dot of carmine on the inner corner adds brilliancy to the eyes.

Before powdering, any improvements in "shaping" must be done. If the nose is inclined to be broad, a high light with the palest foundation tint can be drawn down the centre and the sides slightly shaded; the high light can continue to the tip if the nose is short, but should be blended before reaching the end if the nose is too long. To round the chin, the upper contour can be slightly shaded with lake and grey and the point of the chin can be made prominent with a high light. To correct fullness under the chin, 9 is worked in with the foundation. Some actresses apply a little rouge for this purpose with excellent effect.

After powdering (to dry the surface and fix the paint) the eyebrows are accentuated with a black or brown eyebrow pencil and the mouth is made up. The shape of the lips should be improved, where necessary, with the lipstick, emphasising the dip in the middle of the upper lip and - unless it projects - painting the lower lip a shade lighter than the upper. The eyelashes can be made up with water cosmetic; actresses generally use black grease eye-cosmetic, melting and then applying it on the loop of a hairpin; or a small quantity of the cosmetic is melted in a metal spoon over a candle flame and brushed on the lashes with a fine camel-hair brush.

Old-age Effects

An effect of fragile age for either sex is obtained by using 5 as a foundation, pale colour on the lips, and a light blue liner blended with lake to get a delicate purple for the shadows.



THE ART OF MAKE-UP for the stage, the films, and the television screen has to be mastered under expert tuition. The photograph shows first-year students receiving instruction from Miss Margaret Leonard, stage make-up professor at the Guildhall School of Music and Drama, London.

Any faint indications of natural lines should be followed, pencilled with lake to begin their course and finished with the tip of the little finger; a high light is placed above each line with a white liner, and delicately worked also with the finger-tip so that the white blends a little into the foundation. The cheeks should be shaded below the cheek bones, the eyes deeply shadowed under the brows, and the hollow at the corner of the eye should be emphasised with lake.

The eyebrows and lashes may be made up with water-black, or, if an effect of greater age is needed, the lashes are powdered and the eyebrows are whitened with the white liner. The nose is sharply defined on the bridge with a centre high light and shaded at either side to give it a bony effect; the upper part of the chin also is shaded, and the point of the chin may be brought into high relief with 1½ or 20. Hollows in the neck must not be forgotten, and the veins on the hands should be emphasised with a blue liner before applying wet white.

Character Parts

For a fat effect the features should appear small in the expanse of face. The eyes should not be enlarged by shading; and the nose (instead of having a light line which defines the bridge) is given a shadow at the tip and a high light above to shorten it. Carmine should be placed well down on the cheeks with high lights above, to make them appear rounder.

The most important point about a Mongolian type is the slant of eyes and eyebrows. With a little 20 for high lights, 5½ and 6 may be used for the foundation and 9 for colour. The

cheek bones must have sharp high lights. A piece of white soap is softened and placed over the eyebrows. When this is dry, the grease-paint is gently smoothed up to it, and the hairs are invisible. With the eyebrow pencil the ends of the eyebrows are drawn up in a slanting curve. To give the oriental effect to the eyes, a line is drawn from the outer corners about half an inch upward with a black liner, and then softened into a shadow with the finger-tip. The upper lids are shaded on the inner corners only; the outer portions are brought into prominence with a strong high light, which is continued up to the eyebrow. The sides of the nose are as light as the front, to give a broader effect; a deep shadow placed beneath the lower lip—enlarged in shape with 9—gives it fullness.

For a Gipsy, Mexican, etc., 5½, 6, and 8 can be used for the foundation with a touch of 9 for colour for hands and neck. Details of eyebrow shapes and hair-pieces should be copied from distinctive types.

For Jewish parts the nose can be slightly bridged with nose paste and the nostrils distended by high lights and downward curves to the lobe with a lake liner. Beards and moustaches are each adjusted in two pieces and affixed with spirit gum when the rest of the make-up is completed, softening the edges with crêpe hair and colour.

With period white wigs, make-up should be fair. A man's wig needs careful arrangement, as the line of the join must be concealed on the forehead. A good wig is built on a silk foundation with a small band of flesh-coloured silk where the front meets the forehead. The wig is put on after grease paint has been applied, but before powdering. The top of the forehead should have any grease removed from it. The wig, held by the sidesprings, is placed on the head with the edge in the right place on the

forehead. Then, the front of the wig being carefully held down with one hand, the back is drawn into position. A thick layer of the foundation paint is put along the join and worked smoothly into the forehead.

Wigs should not be worn for juvenile parts unless absolutely necessary, as false hair ages the face. In costume plays where the style of dressing demands a wig, actresses often work their own front hair over the artificial, colour permitting, to soften the effect. Should the part require an older appearance, a wig is an excellent help to character make-up, and when depicting a modern woman with a smartly dressed head. White grease-paint and powder may be used to whiten hair at the temples. For a grey effect a shampoo powder looks natural, but needs to be renewed between acts.

Screen and Television Make-up

As the introduction of electric lighting into the theatre revolutionised stage lighting, so acting for the screen or television requires the adoption of special methods of make-up, made necessary by the powerful lighting of the studio and the sensitivity of the camera. Make-up for the screen actor is decided in the film studio. Even crowd artists are given directions as to the particular materials they are to use. The cameraman is the absolute authority as to what constitutes a correct make-up for the particular lighting and individual. In most large studios there is a make-up expert who keeps a stock of all requisites and superintends this important business. Colours of foundations, powders, shadings, eyebrow pencils, and lip rouges are graded in charts; but frequently the individual has to alter a number to suit the cameraman's requirements—using a dark powder with a fair foundation, or blonde eye shadow with brunette colouring.

LESSON 9

Repertory, Little, and Amateur Theatres

THE professional theatre of Great Britain, centred on London's West End, has lost ground since the beginning of the 20th century, partly because of the competition of the cinema, and partly because of television in the home. Tastes for entertainment, either public or private, change. Television affects the attendance at cinemas and establishes supremacy over specific radio programmes, televised plays being preferred to plays either broadcast or produced in the "living theatre." Thus the difficulty of attracting theatre audiences regularly is intensified, notwithstanding experiments such as twice-nightly performances, earlier openings, and the organization of

theatre-goers' clubs. But West End theatres continue to attract tourists from abroad, residents in London's outer circle and the suburbs, and visitors from the Provinces.

The Repertory Theatre

Professionals who are not members of touring companies in the Provinces are actors and actresses who are associated with a resident repertory company. Bernard Shaw's ideal theatre would have been "A factory of thought, a prompter of conscience, an elucidator of social conduct, an armoury against despair and dullness, and a temple of the Ascent of Man." The ideal repertory theatre company would



A PLAY IN A CHURCH. Christopher Fry's "A Sleep of Prisoners" has been presented in many churches in England and elsewhere. Sponsored by the Religious Drama Society of Great Britain, the play was first performed in St. Thomas's church, Regent St., London.

function in a suitable building, and have a company of players of sufficient strength to ensure adequacy of casting for varied types of plays and to enable the majority of its members to take big and small parts in turn. Elaboration of the basic idea would be the organization of a tour of a repertory company within a restricted region, to make practicable continuity of the performance of any play for a specific period.

Before the professional theatre began to weaken by transference of public support to the cinema, some repertory theatres undertook important productions of new plays by well-known playwrights, or of plays which did not strongly commend themselves to ordinary commercial managements. The Birmingham Repertory Theatre is an outstanding example of laudable work undertaken in successive years and marked by artistic achievement at a price. It had its origin in play readings by amateur actors in 1907. Stemming from it, the Malvern Festival was begun in 1929. The oldest still-functioning (1957) repertory theatre is the Liverpool Playhouse, which was started in 1911. It was the third repertory theatre to be opened in Great Britain, the two theatres that preceded it being the Gate Theatre, Manchester, and the Glasgow Repertory Theatre.



THE LIVERPOOL PLAYHOUSE presents a scene from its modern-dress production of Sheridan's comedy "The Rivals." Started in 1911, the Liverpool Playhouse is the oldest still-functioning (1957) repertory theatre in Great Britain.

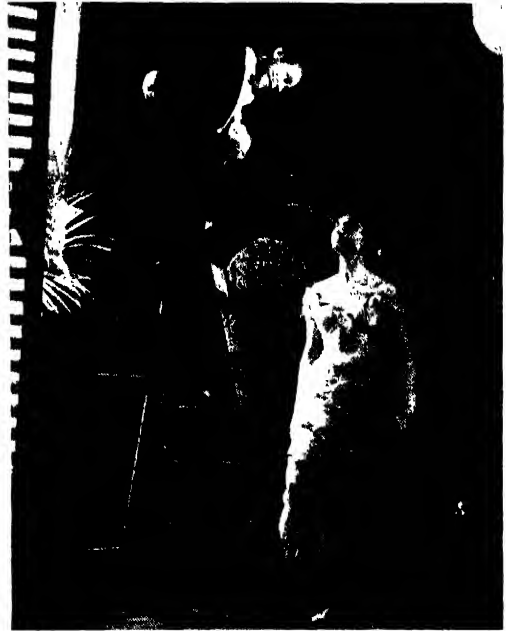
Distinctive productions of Classical, Elizabethan, Restoration, and contemporary plays are given by the Old Vic. After the Theatre Royal, Bristol, had been bought by the Council for the Encouragement of Music and the Arts (C.E.M.A.) in 1942, the Old Vic company began to give productions there, the theatre becoming the first state theatre in England.

Amateur Societies

"Little" theatres, often because their productions are artistically but economically planned, stimulate and encourage interest in playwriting and produce new plays, as do some repertory theatres. One manifestation of virility in the theatre is the growth of the amateur movement. Hundreds of amateur societies specially interested in writing, producing, and playing in "straight" plays are affiliated to the British Drama League. Others are affiliated to the National Operatic and Dramatic Association, the corresponding organization for amateurs whose primary interest is in "musicals." Festivals and competitions within the movement make possible constructive appraisal, in public, of amateur productions and are supported by an increasing number of municipalities, some of which have a drama adviser.

Local authorities under the Local Government Act (1948) have the power (Clause 132) to spend up to the value of a sixpenny rate on entertainment, in Scotland 4½d., providing the entertainment, or erecting buildings for it, or both. The first of the civic theatres was decided upon by Coventry in 1954. Brought into being by amateur activities were the Guild of Adjudicators and the Little Theatre Guild.

Many amateur companies aim at possessing their own theatres. The non-professional group of actors and technicians known as the Tavistock Repertory Company was granted a lease of Canonbury Tower (London) in 1952, and in 1953 celebrated its 21st birthday by opening the Tower Theatre. The Questors, Ealing, another London amateur society, succeeded in giving productions in its own theatre. A



A NON-PROFESSIONAL GROUP of actors and technicians known as the Tavistock Repertory Company (London) stage their plays at the Tower theatre, Canonbury. Here is a scene from "Ring Round the Moon."

provincial forerunner of these was the famous Maddermarket Theatre, Norwich.

Local pageants and open-air performances are other expressions of amateur work, including productions by college and other students, outstanding examples being the performances of Greek and of Shakespeare's plays at Bradfield College and by drama groups based on Oxford and Cambridge Universities. The Arts Council developed the work started by C.E.M.A., which it superseded.

Some West End stars gained their first knowledge of the stage as actors or actresses in amateur companies.

LESSON 10

The Sound Picture as a Dramatic Medium

SOME famous film directors maintain that the dramatic talking film is an adaptation of, and a complement to, the traditional stage drama. Other famous directors, mostly in European studios, consider that the cinema is a distinctive art, still in an experimental stage, evolving its own perfect technique from the silent film with the added quality of sound.

To the first group belong many American and other noted directors, who consider that

plays should be tried first on the stage, as being the less costly means of production, and then, if publicly successful, screened forthwith. Such directors firmly believe in the stage actor for filming. They consider his training essential for characterisation and voice production.

The tendency of the second group of film directors is to use dialogue only for clarity and to give plausibility to the figures. They seek a characteristic rhythm for each picture.

Symbolism is used to explain certain scenes without words. Every scene is not accompanied by its realistically appropriate sound. For example, a woman is seeing her lover off by train. It is barely moving, but, after the preliminary whistles, and the realization by the actors, the sound is of a train at full speed. This dramatizes for the audience the idea of separation in the woman's mind.

Cutting and Editing

Apart from ideas on direction, all great pictures are edited to attain dramatic rhythm. Some directors supervise the assembling and cutting of their own pictures because they consider that editing is the basic creative force of the work. Even when the production is in the hands of a team of experts, at the finish a good film bears the stamp of the director.

Every cinematograph film is built up from a series of strips of celluloid recording the separate "takes" of the camera. These are numbered in accordance with the scenes shot in the studio or on location. After the laboratory processes of developing and printing, the film is roughly cut and assembled in sequential order, redundant matter and technical imperfections being removed. These assorted strips of celluloid, on which the camera and microphone have recorded the appearance and voices of the actors and of other objects and sounds essential to the film, are merely the raw material from which the finished picture is made. The actors themselves are thus included as raw material, while the various technical experts, cameramen, electricians, recording engineers, etc., are the team captained by the director, whose work culminates in the final editing of his own pictures.

The mechanical task of cutting the film on completion is often described as editing, but in its correct sense the word has an actively constructive meaning. A great director understands his whole picture, which, besides being an elaborate piece of technical work under his supervision and control, is his own personal interpretation of the drama selected.

On him depend the unity and dynamic force of the production. The lens of the camera is to him the eye of the spectator. He must, while making the picture, be able to visualise it as a coherent whole, building up every incident with temporarily disconnected shots. On his final assembling and cutting of these depend the rhythm and continuity of the film.

The visual impression from the screen can be intensified at the will of the director by the art of the close-up. Any animate or inanimate object, or part of an object, can be forced on the spectator's notice by this means, and emphasis is not due to the actor's art only.

The motion picture is free from specific limitations. Its advantage lies in its flexibility. Only moments and actions need be recorded which are characteristic, or which enhance the meaning of the story. Dialogue can be restricted to a few words before the action is transferred to a totally different filmic scene.

Film space is created on the screen. A long shot may be taken of a real exterior—a bridge, a railway station—while for close-ups any portion of the structure or building may be reconstructed with realistic detail in the studio. A film company may work for weeks in Egypt, Cornwall, Morocco, or Canada, while in the studio, getting ready for their return, an army of scenic artists is building up sets to correspond with the exteriors shot on location.

LESSON 11

How a Film is Made

BROADLY speaking, there are three stages in the production of a film. The first is evolved in the scenario department, where the "shooting script" is prepared; the second takes place on the floor of the studio where the scenes are recorded and photographed, or on location; the third stage is completed in the cutting room, where the developed and printed picture is assembled and edited.

The shooting script of a picture, with its mass of cinematographic detail, possesses no entity as a literary form. It does, however, contain a great deal of highly specialised work. The story which has been selected for production has to be put into film language with explicit technical directions.

Several scenarists may be used to do this, and, in addition, a well-known dramatist may supply dialogue. A continuity writer puts the finishing touches, in order that the whole picture may flow evenly, with unity of style and proper development of action. The director may or may not actually be responsible, or partly responsible, for the scenario of his film, but he is always in close touch with its development from the first rough plan to its completion as a shooting script.

Continuity is vital in the finished picture, although impossible during the actual taking of the film. A set—it may be a room, part of a ship, a staircase, a factory, or any other required environment—is built in the studio; and all the scenes taking place in this set, in

whatever way they may be spaced through the scenario, must be finished before going on to another set. Otherwise it could not be removed, and no studio could contain at once the many sets required for a picture.

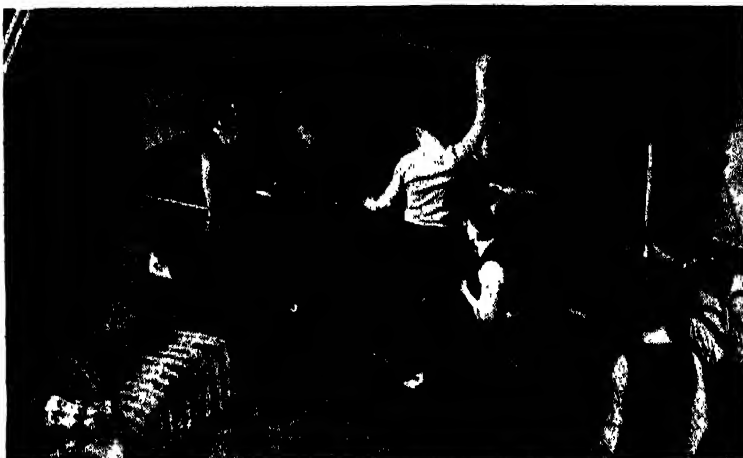
Unless the shooting script provides a perfect filmic plan the director cannot visualise clearly the course of development of the whole story. Everything that affects the relation of one shot with another preceding or following it, or the meaning of the particular shot, has to be considered. If not, taking scenes from many different-time sequences in the scenario would introduce the possibility of irreparable errors, or those involving the expense of retaking scenes. The smallest error in continuity and poor construction affect the spectator's interest.

The technique of a film differs from that of a play. Explanations of past events should be shown happening and not told. The strength of filmic representation depends on the flexibility of the medium to the director's will. And a picture to be effectively dramatic must possess visual appeal and be composed of externally expressive images.

Arrangement of Shooting Script

When story and dialogue have been worked at to the satisfaction of the director, the scenario has to be put into shooting script by a technical expert usually known as the continuity writer. The pages of the script are divided into two columns. On the right all the dialogue and sound directions for the microphone are set down; on the left, all the business of the action and directions for the camera. It is in working out these directions that expert knowledge is essential.

Each scene is taken from several camera angles, and each position of the camera is worked out and numbered in the shooting script. A close shot, medium shot, or long shot may be continuous in action. The close-up merely directs the spectator's attention to some



CAMERA TECHNIQUE IN THE STUDIO. Taken during production of the Gaumont-British film, "Love and Let Love," this photograph shows the camera in position on a trolley to commence a truck shot. On the left is Anatol Litwak directing Madeleine Carroll and Ivor Barnard.

Courtesy of Gaumont-British Corporation

important detail or focuses attention on the actor in order to enhance interest. The exact meaning and movement or expression required are set down in the left-hand column of the page. To indicate a lapse of time, a picture fades out and a new scene fades in. When a scene changes as if a blind were pulled across the screen, it is known as a "wipe-dissolve." This is not a camera direction, but one for the printing machine. To carry on the spectator's thought without break, a scene may be dissolved into the next.

The panorama or "pan" shot is accomplished by a camera accessory which enables it to follow its object as this moves before it. Tracking shots, or truck shots, are taken with the camera on a trolley or truck, so that it can travel as it takes the scene. Panorama and truck shots can be combined when the camera turns on a swivel as it moves laterally.

The iris, or mask, darkens the picture except for a light opening in the centre. This camera device is used to denote looking through opera-glasses, a keyhole, or other small aperture, the mask being shaped in accordance with the shape of the particular aperture.

In the right-hand column of the majority of scripts (sometimes the directions extend across the full width of the page) the scenarist's directions for the microphone include re-recording. This is the putting in of extra sounds after the picture has been taken, such as bells, music, mechanical noises, and so forth.

LESSON 12

Filmcraft in the Studio

It would be difficult to exaggerate the cinema's importance in national recreation.

In common with other mechanised arts, the mechanical side has developed more swiftly than the artistic. Technical abundance is such that it is sometimes believed to replace original ideas and intellectual direction. But film production cannot be a cheap business. Unless the technical side satisfies the public, the finest story and acting are heavily handicapped.

A studio has to be either built or rented. It may be in a production centre covering many acres; it may entail the lay-out and maintenance of its own extensive grounds with gardens, roads, wooded backgrounds, ornamental water, and space for building exterior sets. The studio itself is equipped with a vast and complicated system of lighting. The walls are sound-proofed, and for the sound-recording installation heavy royalties must be paid to the manufacturers of the apparatus that is used.

Production Costs

In addition to the main studio there are all the dressing-rooms for artists, the scenario department, the cutting room, scenic studios, model-makers', property men's, and carpenters' workshops, wardrobe rooms, and the expensive

plant of printing and developing works. The producer (not to be confused with the director of the film) has the cost of all this to consider, as well as the salaries of his technical, working, business, and artistic staff, big sums spent on authors' fees, publicity, and the requisite sets.

The cost of a sound film, like other manufacturing costs at the beginning of the second half of the 20th century, was neither standardised nor stable. In the early '50s the British Film Academy published *The Film Industry in Great Britain: Some Facts and Figures*, giving the following estimated total costs.

Exceptionally Expensive British Production	£
<i>Hamlet</i>	550,000
Expensive First Feature Films made by Important Directors :	
<i>Oliver Twist</i>	350,000
<i>The Winslow Boy</i>	300,000
Average First Feature Films :	
<i>Spring in Park Lane</i>	230,000
<i>Obsession</i>	120,000
Cheaper First Feature Films :	
<i>Blue Sea</i>	75,000
<i>Now Barabbas Was a Robber</i>	100,000
<i>No Room at the Inn</i>	95,000

Curtain-raisers were made at an average cost of about £20,000 each. Two films for which a country house was used as a studio cost £15,000 (*Dr. Morelle*) and £12,000 (*P.C. 49*).

Highly paid technicians are the cameraman, the recording engineer, and the art director. The cameraman controls the lighting in association with the chief electrician. He has to keep a proper balance of light by means of an array of arc lamps, spot-lights, giant "suns," and other powerful illuminants. Each shot is specially lighted and the dramatic angle of the camera has to be found. The recording engineer has to fix the position for the microphone with equal accuracy; the volume of sound is controlled by another expert.

Art Director

The art director of the unit is responsible for the scenic side of the production. Besides designing and supervising the building and furnishing of sets for the studio, he sometimes



IN THE STUDIO. In the production of "The Mudlark," the film of a book by Theodore Bennett, last-minute instructions are being given by the director (Jean Negulesco, on the right). On the left is the director of photography (George Piniral). Items of studio equipment include the focus-puller, which helps the director to get players in focus for camera work.



ON THE SET. A rehearsal is in progress of a scene in the Pathé film "Thursday's Child," starring Sally Ann Howes and Wilfrid Lawson. In the centre are the director and assistant director, and in the foreground (right) is the continuity girl. The cameramen are focusing and the electricians standing by. At a later stage a temporary wall will be built on the right, and short or long shots made of the groups at the tables.

Photo, courtesy of Pathé Pictures Ltd

has to alter the landscape on location. For instance, a house may have to be built to be burnt down, or a faked avalanche to be started on an alp. Much of this type of scenic effect is combined with model work in the studios.

Production and Continuity

The film producer, in collaboration with the casting director, having entrusted the making of the selected picture to a director, proceeds to engage the most important members of the cast. The rest of the parts are then allotted, and the film goes into production on the studio floor after the preliminary work on the scenario has been completed. While a screen drama may require weeks or even months of preparation, the actual shooting of the scenes to make a feature film takes from thirty to thirty-five days. The period depends on the scope of the production.

While the picture is being made, an important member of the director's staff is the continuity girl, or floor-secretary. In her notebook she enters, for future reference, all the details about clothes, make-up, changed positions of furniture, arrangements of draperies, etc., which concern the separate shots. Only in this way

can discrepancies or mistakes be prevented when a different part of the scene is acted on a subsequent day. The duties of assistant film directors vary. In the main they have to do with sending out calls for the actors required at the studio according to schedule, taking preliminary rehearsals and prompting at these, dealing out parts or pages of dialogue to the cast, and keeping an eye on costume and general detail. An expert in the art of actors' make-up attends to this important section of the presentation side.

During the actual takes absolute cessation of all sounds not to be recorded by the microphone is essential.

Language Difficulty

To preserve the universal appeal of the film, threatened with the diverse language difficulty, some big production firms use the trilingual method. Three versions are made of the selected story—a German, a French, and an English, for instance. But this is more common on the Continent than in Great Britain. When a French company and an Italian company operate jointly to make a film, the French players speak French if the *locale* is France; if it is

Italy, the Italian players speak Italian, and the required language for the others is "dubbed in." This pooling of resources reduces costs.

The method entails much preparatory work between the supervisors of the several versions. Business and detail which are quite natural in

a French presentation of a story do not seem good in the German. Dialogue cannot be literally translated, even characterisation must occasionally be changed; but films of the super-class produced in this way are assured of a world market.

BOOK LIST

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POLITICS

MAN is by nature a civic animal, wrote Aristotle ; and the saying of the Father of Politics has lost nothing in truth with the passing of the centuries. To-day as in ancient times the art of living together in organized communities is one that all must learn, and the Lessons in the Course that follow serve to illustrate man's constant endeavour to master the art and provide it with a theoretical backing.

Politics to-day has a far wider content than heretofore. In particular its study and practice are closely linked with ECONOMICS, and the Course on that subject in Vol. 1 should be consulted. Reference may well be made also to the Courses on HISTORY in Vols. 1, 4, and 5, LAW in Vol. 3, and SOCIAL ANTHROPOLOGY and PHILOSOPHY in Vol. 2.

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LESSON 1

Dawn of Empires

By the word politics is meant all that has to do with the relation of human beings to the state. Because the Greeks began the study of this relation, and because their states were cities (not, as in the modern world, countries), this study was named from *polis*, the Greek word for a city.

But the relationship existed long before the Greeks, for a state is a community subjected, either willingly or by force, to some form of government. So long as men have lived in communities—that is, so long as several generations of one family began to form a unit for protection and production—government has existed and man has been a political animal.

Understanding of both past and present demands acquaintance with early forms of government and political institutions; interesting in themselves, these also contain the seeds of modes of government in operation to-day. The earliest groupings of the human race were small, because of geographical barriers, primitive means of communication, ignorance, suspicion, and fear of the unknown, and the constant threat of failure of a precarious food supply. Relations between the individual and the community probably exhibited countless grotesque manifestations of trial and error before they arrived at stages revealed among the most primitive peoples of the present day. The earliest forms were not created to meet the needs of a civilized society.

States and Systems

The Egyptian state grew out of fear of the gods, exploited by priests and kings. The Hebrew state was carved by Moses out of the idea of dependence on the One God. The city states of Greece arose from "heroic" tribal formations, to range on a common slave-owning basis between Athens with her popular assembly of 15,000 citizens (whose executive officials were appointed by casting lots, and whose elected generals took command in turn) and her commercial rival the luxurious Corinth, to the dreadfully militaristic Sparta whose only walls were the shields of her citizens, and whose kings could conquer but could neither organize nor govern any civilian state.

The modern conception of the citizen's relation to the state is of Roman origin; the Roman lawgivers sought first to create confidence in the state and its institutions. The Roman system was not cut off from all that had gone before; Romans assimilated much of what was best of the institutions and traditions of countries they conquered. To them law was the offspring of

custom and tradition, and so it has remained.

The study of politics has been hindered, until recent years, by the expenditure of effort on consideration of what a state *should be* rather than of what it is *likely to be*. Most writers on the subject have been unduly influenced by the first great authors to handle it, Plato (427-347 B.C.) and Aristotle (384-322 B.C.), whose aim was to discover rules for an ideal state. They believed that if they could demonstrate the soundness of a workable system, their fellow-citizens could proceed to adopt it—they believed man to be on the whole a rational being whose reason could guide him to wisdom and well-being. Acting partly on this theory, the Athenians came to grief; where they failed the rest of Greece could not succeed. The Greeks believed that man was master of his fate, and that anything that seemed good to him was within his reach, provided he went the right way about it. A modern concept is that man can move only in the direction indicated for him, not by fate or providence, but by his own past.

One Element in Common—Fear

This difference of belief helps to account for much of the contrast between ancient and modern political systems. Even to-day some follow Plato and Aristotle in seeking "to determine what the constitution and action of the government ought to be." Such determination was stated by the 19th-century philosopher Henry Sidgwick (1838-1900) to be the primary aim of his *Elements of Politics*; this book is still a standard work, but more lately the view recommended by J. R. Seeley (1834-95) in his *Introduction to Political Science* has been preferred. Seeley opposed any endeavour to find the perfect state, arguing that the naturalist tries to establish not what would be a perfect plant or animal but what animals and plants are and do, or were and have done in the past. Not otherwise, said Seeley, should states be studied.

Human governments and societies have always been impermanent and variable, but they have one element in common—fear. Fear of one another, of the gods, of famine, of wild beasts—all these fears have contributed to the formation of societies. Many early tribes took to agriculture, many others remained in the nomad stage, roaming about with their flocks and herds. These nomads were indirectly responsible for a big step in political development—the creation of the city.

The man accustomed to driving cattle was by reason of his occupation better fitted for adventure and warfare than the man with the hoe.

He often had to think quickly or be trampled to death. His mind worked more freely than that of the cultivator, who stayed in one place and followed the same routine year after year. The nomads were obliged to combine, to have leaders, and sometimes to keep strict discipline. Travel itself, and the work of pitching and breaking camp, required regulations observed by all. And so they were more than a match for the tillers of the soil when the settlements became worth raiding. At first the raiders simply killed, burned, and stole; then they carried off slaves, let buildings stand, and spared enough people to raise crops to be looted in the following year.

Defensive Measures

The agricultural communities were forced to adopt measures of defence. Some employed nomads to protect them against other nomads, often falling victims to the greed of their mercenaries. Others paid tribute direct, to buy raiding tribes off. Others fought back; among them arose a new kind of leader—the military chief chosen for skill and daring. Sometimes one man combined the functions of patriarch and soldier. Frequent fighting produced a warrior class or caste, under arms all the time, taking orders only from their leader, though he might not be the actual chieftain. They were fed, clothed, and armed by the leader, whose supplies were provided partly by the community, partly by loot captured from the enemy. This was the beginning of the military profession, of the standing army which often became the deciding factor in the politics of later ages.

One consequence of the institution of raiding (which in Scotland lasted until the 18th century, and in Africa still occurs among people in the tribal stage) was that communities grew larger. The people of a district were compelled to live more closely together, for safety. The first towns and cities began to take shape. Some consisted of a number of villages; others accommodated cultivators whose lands lay outside and who were afraid to live on them. The cities were walled to keep out raiders.

The Babylonian Empire

The world next reached the stage of empire, that is, of large-scale rule and exploitation. The producers, living in settled circumstances, disinclined for warfare, were at the mercy of a smaller number of active, hardy, and enterprising wanderers. One of the earliest empires about which much is known is the Babylonian empire. In the latter half of the 19th century, scholars found the key to the picture-writing on Babylonian clay tablets excavated in Mesopotamia, and obtained a great deal of information concerning the social and political institutions of that part of the world about 3000 B.C.

These tablets do not show how Sargon, who was king when their records begin (?2750 B.C.), came to power, but he no doubt belonged to a tribe of nomads who swept over the fertile land between the Euphrates and the Tigris and conquered the farming people there. Sargon and his successors governed a small territory and were little more than resourceful tribal chiefs, but they certainly gave a new turn to the story of mankind.

Kings and Priests

The neighbouring kingdom of Assyria was ruled by a military class. Babylonia, like Egypt and (later) Persia, was a theocracy, or had become one by the time the tablets were written. A long period may have passed between conquest of the country and the date of the tablets. As the conquerors settled down to the business of government, they must have realised that nothing kept people quiet more effectively than fear of the gods. Thenceforward they divided their power with the priests of local deities, and both did very well out of this arrangement. The kings acknowledged that they received their authority from the gods, and claimed that their laws came from the same source. The priests told the people that the gods would punish them if they rebelled or refused to do the king's bidding.

Assyria, at one time dependent on Babylonia, had a temperate climate; Babylonia was sub-tropical. The Assyrians were, or became, a hardier people; they developed an aristocracy of soldier-nobles, revolted, and set up an independent monarchy, whose emergence possibly marks the historical beginnings of feudalism.

Feudal Organization

Feudalism, which prevailed almost everywhere at some time, has been well described as the link between patriarchal and political society. The root principle of feudalism was that land belonged not to the people living on it and cultivating it but to conquerors who had invaded it. In theory, it was all the king's land; he granted tracts of it to his followers, who occupied them on condition of military service. They, the feudal lords, let out parts of their estates to cultivators, who paid them by working part-time on the lord's own land or by handing over part of their crop, and also by serving as soldiers when summoned to war.

The great changes made by feudal organization were: (1) abolition of the ownership of land by tribes and clans, i.e. large extensions of the family; (2) introduction of individual and hereditary ownership; (3) imposition on the mass of mankind of the payment of ground rent in one form or another. This was the natural, indeed the inevitable, outcome of the raiding period. As soon as it occurred to

some men that there was a way of living easier than work, that accumulation of property was desirable, and that might was right, old systems were doomed over much of the earth's surface, and the march towards present forms of civilization had begun.

Many centuries elapsed before anything like modern political systems came into use. Every government in early times was more or less a theocracy. Kings were assumed to be the representatives—sometimes the embodiments—of gods. Priests played an important part in the business of government. Conquests were made in the name of gods. As civilization advanced, the practice of human sacrifice was superseded by that of animals as the most likely method of winning divine favour. Some forms of religion made one man the sacrifice for all—by his death he saved others from being slain by an angry god. To the substitution of little clay figures for the bodies of wives and servants killed to be buried with their lords and masters, is due much of present knowledge of the social life of the ancient Egyptians.

Power of the Pharaoh

Egypt had a central government as early as 3000 B.C. Little is known about the early dynasties. The pharaohs, as their kinds were called, ruled more or less under the influence of the priests, who taught that for thousands of years the gods themselves had ruled the country and had then appointed human beings to act for them. The power of the pharaoh depended on pleasing the gods; only the priests could tell whether he did so or not. Now and then a ruler arose strong enough to challenge the priests. Cheops (reigned c. 2898–2875 B.C.), who built the Great Pyramid, was able for a while to limit their power. Akhnaton (1375–1358 B.C.) aimed at establishing a nobler religious faith, which might have freed the people from superstition and priestly oppression. But his project came to nothing. Not until the foundation of the Persian empire by Cyrus was the theocratic principle supplanted.

Cyrus, who died in 529 B.C., was one of the great men of history. A conqueror of a new type, he was the first considerable ruler to practise toleration. Darius (king 522–486 B.C.) organised the Persian empire on lines more elaborate than any laid down before his time; those lines may be traced in the government of present-day states.

The Persian king's authority was absolute. Loyalty to his person and family was substituted for the traditional reverence attaching to a monarch because of his divine origin. Fear of assassination set some restraint upon tyranny; also the king undertook to observe the customs of the people and never to reverse an order. He consulted with the great nobles, but was under no obligation to take their advice. Seven princes held the highest offices of state and acted as supreme court judges. The criminal code was severe, though no one could be put to death for a first offence. Trade was despised; no middle class came between those owning large properties and the mass of the people. Men were trained to be expert riders and archers, and to be scrupulously truthful. Women occupied a very inferior position.

Darius first showed how an empire, vast for those times, could be run without the use of force. He introduced a system of taxation, instituted conscription for military service, and organized rapid communications. His "royal road," simply a track for relay runners, was a great innovation; fast couriers used it, running with despatches between the provincial officials and Susa, the capital.

It is not certain how far Darius indulged in the court ceremonies which later became so elaborate, involving hosts of officials in the red robes and golden chains which have been marks of office and authority ever since. Possibly Darius was too busy to spend much time in ceremonial or amusement. He was perhaps the first to establish that dominance of the state over the individual which is covered by the word *imperium*, and the first ruler to show how sovereignty could be delegated.

LESSON 2

As it Was in Greece

THE Greeks in 479 B.C. threw off the domination of the Persian empire and entered upon that remarkable era of their history which lasted little more than a century but produced unsurpassed works of intellect and art. Among their activities was the study of politics, which they understood as a search for an ideal system of government. Almost all political studies since then have been built on the foundations laid by Plato and Aristotle:

the work of these men grew out of what had gone before.

In the sphere of government the Greeks invented nothing. What they did was to allow methods they inherited to develop; they were not afraid of experiment, and their institutions changed rapidly without altogether losing their original character. Until the great age of Greece there had been little or no discussion as to what forms of government would allow

people to live "the good life," or as to how much an individual should give up for the benefit of the state.

In Athens men talked a good deal about these things, but they were content to talk, and in practice to put up with a state which was very far from ideal. Many Athenians regarded their form of democracy as an unwise, even a disastrous, change from the rule of "tyrants," kings, or aristocracies; such critics did not see that rule of the people might have worked well enough if honest and competent leaders had come forward in sufficient number. They blamed a political system instead of blaming the politicians who mismanaged it.

Assembly of Free Citizens

In Greece, especially in Athens, it became possible for the first time for a politically-minded man to obtain influence by public speaking. The Greek assembly of free citizens was essentially the same as the more primitive gathering of the tribesmen; under the legendary rule of King Theseus the Athenians were divided into four groups still called tribes. Athens began by having one king; Sparta had two kings. Next to them was a council of elders, and then came the popular assembly, both survivals of an earlier more elementary arrangement. In Athens the kingly office was discarded; substitutes such as the "archons" (rulers) were gradually deprived of power. The attempt was made again and again to vest all authority in the free people as a whole. It is instructive to notice how often, in Athenian history, the democracy is described as being "restored" after some crisis or near-crisis in which the affairs of the city were placed in the hands of one man or a group.

Domestic Slaves

Solon, whose name has become proverbial as that of a wise legislator, began the process of "democratising" Athens. The supposedly even more democratic earlier constitution drawn up by Draco is now considered legendary; some of its alleged articles were so severe that the word "draconian" is still used as a synonym of "drastic." Solon (c. 638-c. 558 B.C.) himself a shadowy figure, undoubtedly lived and made laws; and in spreading sovereign power among the citizens he seems to have reverted to a more ancient method of decisions by acclamation.

The burden of debts which has always attended systems of payment in money had begun to be disturbing. Solon may have cancelled all debts, so that a fresh start might be made; he certainly freed all who had been enslaved by their creditors, and made it impossible for this kind of enslavement to recur. The distribution of land appears to have

presented problems not unlike those which still puzzle people to-day.

Greek democracy was, however, so different from what is now called democracy that lessons drawn from it are nearly always misleading. The *demos* is now reckoned as comprising the whole of a people; in the Greek city-state at least three-quarters of the population were excluded. In Athens, for instance, there were three or four slaves to each free citizen, and the slaves had no rights of citizenship. Nor had the women, whether they were bond or free.

Slaves were to some extent protected against brutal treatment; on the whole, they were probably not ill-used at Athens. Employment of domestic slaves, even by the poorest free citizens, was a necessary condition of free men's lives. It gave them leisure to attend the assembly and to act as jurymen, although jury duty came to be chiefly the function of those who had retired at 60 and found the payment allotted to it a useful old-age pension. Much of the citizens' time was spent in public places where the affairs of the city were constantly discussed. When called up for military service they could leave their homes in the charge of slaves. Their slaves enabled them to celebrate at leisure all the semi-religious and other festivals. These occasions included sports, and the performance of plays written by competitors for prizes; these plays, whether tragedies or comedies, made Attic drama one of the glories of literature.

Assembly and Council

Sufficient numbers of Athenians attended and voted in the assembly to justify the statement that citizens in council governed the state, in spite of a limitation of the function of the assembly, which could discuss only measures put before it by the council. The council consisted of 500 elected members; all male citizens over the age of 30 could offer themselves to the assembly for election. Councillors were well paid for what was regarded as a full-time appointment; they controlled the whole machinery of government, but usually left the affairs of each department in the hands of its own officials, although at times they appointed commissioners to administer over the heads of departmental chiefs. The council worked through a number of committees, some permanent, others appointed for special purposes. One of its duties was to keep the city's accounts, another to impeach any citizen accused by the common voice of injuring its interest.

The method of impeachment was as follows. The council made sure that there was a sufficient number of accusers, and that they were not moved by prejudice alone; it then invited the assembly to decide whether the accused should be allowed to remain in the city. The precursor

of the voting paper was an oyster shell (Greek, *ostrakon*); if the vote went against the man whose good faith or good sense was in question, he was "ostracised," i.e. exiled, for a number of years. The risk of abuse of this method was recognized, and a majority in favour of exile had to be large.

The council not only had control of all the departments of state, but also was the legislative body, although its measures could be rejected by the assembly. What it proposed was usually accepted; the assembly could decree changes, and such decrees could not be appealed against, but such changes were seldom made. The Athenian who voted for war knew he had to go and fight; a prominent public man might find it his duty first to propose hostilities, and then to go himself and take a high command in the army or the fleet.

Greek View of Liberty

Much has been written, mostly in an extravagant vein, about the Greek love of liberty. Dr. Delisle Burns called it "the leading political idea of Athens." To which must be opposed the view of Fustel de Coulanges, the famous French classical exponent, who wrote that "ancient man had no conception of the meaning of liberty." To that Professor Zimmern gave his assent—or came very near to doing so. It is clearly impossible that a passion for liberty in the general sense could exist among people who kept large numbers of slaves.

But so far as their own liberty was concerned, the citizens of Athens were certainly always on their guard. They valued and protected it. Nothing could have seemed more humiliating to them than to be ruled by a tyrant, an irresponsible autocrat—even though he were capable and well-meaning. Their politicians were often incapable; they took bribes, some of them (Alcibiades, for one) openly assisted their enemies. Yet the Athenians felt they could at any time dismiss or ostracise them; they could not be content unless they knew that their affairs were under their own control.

Rule in Sparta

What ruined them was that they could not get clear of the small ideas with which city-states began. The politics of Athens seem like those of a town council. The Athenians were intelligent up to a point, but that point was not so far advanced as many would have us believe. They failed lamentably to reach the chief object of politics, security. They killed Socrates. They kept women in degrading subjection.

While Athens was developing the democratic element in the ancient system of government by chiefs, elders, and public meeting, another Greek state elaborated the element which we call oligarchical. Sparta was ruled nominally

by kings, actually by a cabinet of five men, in whose hands all power was placed. These men were called *ephors* (overseers). They were elected by a popular vote, but they were not politicians who tried to keep their places by pleasing the people. So stern was the discipline under which Spartan citizens lived, and so convinced were they of the necessity for this discipline, that there was no need to flatter or bribe them. From birth they were trained to obey the authorities, and to believe that their rulers knew what was good for them. Set in the midst of enemies, they could hardly have kept their freedom in any other way.

Servants of the State

In Sparta the principle that citizens existed for the benefit of the state appears for the first time in its extreme form. Despotic rulers had accustomed people to the idea that their interest far outweighed that of their subjects. But this was a personal equation. Each despot could say, as Louis XIV said, "The state? I am the state." They demanded loyalty and service to themselves, and their families. In Greece the state emerged for the first time as an abstraction, as an entity with a character and purpose, even a personality, of its own. Here was the beginning of the process which led to the personification of states in allegorical figures, such as John Bull, Britannia, Uncle Sam, French Marianne, German Michael and Germania. It was for Athens that the pleasure-loving Athenians were ready to fight and die; it was to defend Sparta that the rougher, hardier Spartans would brave any danger, endure any hardship. The Spartan kings were looked upon as commanding officers, their business being mainly warlike. They were servants of the state like everybody else.

Kings of Sparta

There were two of them: why, no one knows. This political peculiarity worked badly. There was frequent jealousy and bickering between the two hereditary kings. They were of equal authority, so, if they disagreed, a deadlock occurred. Being a practical, hard-bitten race, the Spartans by degrees took away all their power. They became figureheads. Even when they took nominal command of the army in war-time, ephors went with them and did the work. The ephors together could impeach them if they misbehaved, and have them removed from office.

The duties which the kings once fulfilled as judges were taken over by the senate, a body of 28 members, called the *gerousia*, the council of elders. Here we have the earliest clearly-defined and organized forerunner of all second chambers (British house of lords, French and American senates, and the rest). For not only

did this council prepare measures to be put before the assembly (to which all citizens over 30 belonged), but it could set aside any decisions of the assembly which seemed to it to be unwise.

Sparta affords the first clear example of this power to revise the action of more popular assemblies exercised by nearly all second chambers. The *gerousia* was for long the tribunal which tried kings accused by the ephors of unfitness for office; later this duty was entrusted to a special court. Many other functions were taken from the elders, who eventually became subservient to the ephors; they made little resistance, being all over 60, an advanced age in Greece at the time. Election was by the assembly; as each candidate's name was announced the crowd shouted, and owners of names greeted with the loudest noises were declared to be elected. This method is still practised in the British house of lords whose members are asked to cry Aye or No to propositions placed before them.

The Spartans were divided into four political classes:

(1) Citizens having full rights, called the *equals*. Men of wealth and distinguished descent were combined in this class with cultivators and handicraftsmen. To qualify for it the citizen had to be of pure Spartan origin, to have been trained according to the law, and to be a member of a public mess or dining-club, paying his share of the expenses. These messes consisted of 15 members each, and served the purposes

of the state by imposing the same standard of living on all, keeping men together away from their homes where they might have been too comfortable, and breeding in them a communal spirit.

(2) The *inferiors*, whose rights of citizenship were not as full as those of the equals. They were described as free and independent, but they occupied a distinctly lower position.

(3) The *perioeci* (literally "dwellers round about"), who were subjects, yet not serfs. They managed their own local affairs (they usually lived in communities), but they had Spartan officials over them.

(4) The *helots*, a large class whose condition was little different from that of the Athenian slaves. They were mostly engaged on the land, which belonged to citizens, and they worked on sharing terms (their own share being small). They were obliged to wear a distinctive dress: a sheepskin coat and leather cap. They were used as inferior troops in time of war, and that they were habitually badly treated is proved by their frequent revolts.

The training prescribed by Spartan law for the full citizens was severe, and produced the desired result. The semi-mythical law-giver Lycurgus was supposed to have drawn up the code, but the constitution no doubt took shape gradually over a long period. The system of Lycurgus was apparently not popular, if there is truth in the story that he persuaded the Spartans to promise not to allow any change in it until he returned, and then left the country for good. Later generations accepted the hard physical discipline and upheld the tradition of devoting their energies to the welfare of the state.

LESSON 3

The Political Philosophy of Plato and Aristotle

THOUGH Athens and Sparta were frequently at war, and their citizens were dissimilar in so many ways, some of the finest Athenians saw much to admire in the Spartan political system. Plato in his old age drew up a code of laws for such a state as he would have liked Athens to be, and included in it many Spartan concepts. He stressed the supreme need for obedience, he gave authority to a council of elders, he made marriage compulsory and marriage portions illegal; citizens were to eat in company, land was never to be sold, and so on.

The Republic Imagined by Plato

Plato found the orderliness of Sparta preferable to the haphazard character of existence in Athens, yet only in Athens could such a philosopher as Plato gain a hearing for his ideas. Sparta produced no art or literature or philosophy; her brave and disciplined soldiers were once or twice the instruments of freedom but for the most part servants of dull tyranny

Plato's *Republic* was the first written expression of political thought, and is still an important work on the subject. Plato was a pupil and companion of Socrates (469-399 B.C.), from whom he derived many of his ideas, and whom he made the principal figure in his *Dialogues*. The *Republic* imagined by Plato was probably based on actual Socratic discussions. Socrates was interested chiefly in the real and practical; metaphysical speculation did not attract him as it attracted Plato. Plato tried to be practical himself, so that the *Republic* is a curious mixture of the actual and the philosophic; its philosophic element reaches into the region of abstract thought, while the actual deals with everyday matters such as the education of children and occupations suitable for women. Plato tried to show how the state should help or compel its citizens to live the right kind of lives. He tried first to decide what was the right kind of life—the Athenians called it "the good life"—and what qualities were required for it. He decided they

were wisdom, courage, self-control (including obedience), and fair play.

The Greek word used for this fourth quality is usually translated "justice." But if the term fair play be given the widest possible significance, and used as it is often used in English, it is a reasonably accurate equivalent for "every part doing its work and not interfering with the other parts," which is Plato's definition of the working of a system governed by justice as he understood it.

"The Interest of the Stronger"

Plato gives much space in the *Dialogues* to opposing the suggestion that the ruling principle should be "the interest of the stronger." One of his disputants contends that men always do what it suits them to do, that their chief motives are desire and self-interest, that the most energetically self-seeking reach the top, and that this is as it should be - that the ideal state should give these men of enterprise every opportunity and encouragement.

This principle was very much to the fore in mid-19th century England. It was the guiding principle of the "Manchester school." The Whigs and the early Liberals stood for a policy of leaving people alone as much as possible and letting them find their own level. It is easier to-day than it was for Plato to recognize the weakness of this principle. Its opponents say that the value of a citizen to the state does not depend on his being able to make himself rich and therefore powerful; that often men who do this are harmful to the state; that the pursuit of self-interest by those whose wits are sharper than the average should no more be encouraged than the taking of purses by sturdy rogues who are bigger and stronger than those they despoil.

Three Categories of Citizen

Plato did not adopt this line of argument. He examined the sort of life the inhabitants of a city led in those days. He concluded either that the strongest motive among them was not self-interest but the desire to do their duty, or that this desire *ought* to be the strongest motive among them; it is always a little difficult to know when he was dealing with facts and when with the ideal.

He spoke from experience, when he divided the citizens of his *republic* into three categories: (1) cultivators and handicraftsmen, to provide food and other necessities of life; (2) soldiers, to protect the state and police to keep order within it; (3) a governing class of "guardians," ruling in the interests of the community as a whole. Each of these tasks was to be kept distinct. Plato did not want shoemakers to decide lawsuits, or soldiers returned from the wars to plough the fields or bake bread.

Government itself seemed to him a whole-time job, for which training was required and to which specially chosen men should give their energy without attempting to do anything else. The guardians were to be trained to seek, above all things, *understanding*. The Greek word which meant "love of knowledge" is usually translated "philosophy"; those eager to increase their knowledge and strengthen their reasoning faculty are called "philosophers."

But Plato meant something very different by "philosophy." His "guardians" were to be men like himself, men who tested theory by all the facts they could discover; students of human nature, men who would rule with the object of giving everyone the chance of a good life. He saw that government was a very difficult task, and contended that it should be entrusted only to sages who did not need to struggle for the opportunity to govern, being brought up and educated to that end.

Plato's Communism

The system he believed his wise rulers would choose for their republic was communism. They would not allow private property or family life; no man would have even a wife of his own. All things would be owned by all the people; no separate interests would keep classes apart and injure the state. No citizens could gain advantages in which the rest could not share. What hurt one would hurt all, as when a man has a pain in his finger the whole of him suffers.

The picture of this kind of unity did not please Plato's fellow citizens. They said the guardians would soon be tyrants, that it would be too dangerous to give up democracy, that the republic Plato sketched would be a dull one to live in. Most famous of Plato's critics was Aristotle, whose *Politics* is hardly less famous than Plato's *Republic*. It was part of his attempt to lay down principles for the proper basis and direction of the whole of human life; the other parts were the *Ethics* and *Poetics*.

Aristotle's Method

Aristotle's method was unlike that of his teacher, Plato. Instead of constructing an ideal state out of his imagination, he began by assembling all the available facts about government. He collected information about 158 constitutions of Hellenic city-states, and tried to find out how barbarian peoples were ruled. He then drew conclusions as to the best kind of state, describing his ideal very much as Plato had done. Aristotle's treatise on politics was "the first really scientific discussion of the origin, the elements, the constitution and the conditions of human society" (Andrew Lang). It could not be truly scientific, because a science must be based on the regular production of

certain effects by certain causes ; and since the natures of men differ so much, it is almost impossible ever to know how they will behave. But so far as there is any science of politics, Aristotle is its father.

He claimed that such study was the highest and the noblest of all, because it dealt with men as free citizens of a free state. Yet, by one of the many contradictions which abound in his work, Aristotle was mainly occupied, as an observer, in describing systems of government by force ; as a constructive idealist he could offer little hope that his perfect city would last long. Two considerations which make his suggestions almost valueless to the present day study of politics are : (1) that he regarded slavery as natural and permanent, and (2) that he could not imagine any unit of government larger than a city-state.

Defence of Slavery

Aristotle's defence of slavery placed him in opposition to the more advanced thought of his time--that of Euripides, for example--but he certainly argued ingeniously about it. He explained that his citizens would not have time to lead the good life and look after their political affairs if they were without slaves to work for them. He did not mean slaves to be used for the purpose of money-making, but to give their masters leisure for culture and public business. Trade he despised ; excessive wealth he denounced as harmful. He was opposed to anything which transgressed the limit of moderation. Yet he was immoderate himself in claiming for his "free citizens" alone all the advantages of his system. Mechanics, for instance, could not be permitted to have rights of citizenship because they were "incapable of leading the good life."

Here he brings in his fantastic theory of nature. Anything that he approved of he called "natural." Slavery was as "natural" as property or the family. There were "natural" distinctions between classes. He saw in money the root of nearly all evil ; therefore barter was "natural" and coin "unnatural." One of his objections to money was that it gave power to persons of obscure origin and corrupted the masses by making them idle preys on the well-to-do, who distributed food, set before them free entertainments, and kept them in good humour by public shows, banquets, and ceremonies. Yet by depriving his ideal citizens of gainful occupations, he would have put every temptation to be idle in their way ; further, he proposed that they should have public meals provided for them by the community.

Plato wanted philosopher-kings ; Aristotle went so far as to believe that all his citizens might be philosophers. Aristotle was a shrewd critic, though he criticised at times on grounds

of conventional and local morality, but his mind had nothing like the same sweep and lofty range as that of Plato. His analytical perception and his genius for the illuminating phrase explain the hold his work has kept throughout the centuries.

In many of its arrangements Aristotle's ideal state resembles that of Plato. He believed aristocracy to be the best form of government, but was not bold enough to propose it, seeing too plainly that it would not be accepted. He admitted also that it usually degenerated into oligarchy, the rule of a few in their own interest, which he condemned along with tyranny and democracy. In his republic the middle class was to be supreme, luxury was to be frowned on, education was to be on Spartan lines but not brutalising. Bringing up ill-shaped infants would be punished as a crime. The rule of husbands over their wives and families was to be benevolently despotic. Men were to marry at 37 and women at 18. Aristotle did not say much about religion, but he laid it down that men should not become priests until they were too old for any other occupation.

Ideal State Pivoted Upon Law

The sovereign power was to rest in the hands of the free citizens capable of serving as soldiers. Plato's communism was ruled out, as were his permanent rulers (guardians). Rich and poor citizens were alike to be eligible for all public offices, which would not be held for longer than six months. In his essay called *The Constitution of Athens* Aristotle approved the selection of officials by lot in quiet periods, because it gave the poor and lowly an equal chance with the rich and powerful. In disturbed times he thought it would not work so well. To avoid revolution, all must be treated justly. He put the interest of the state above that of individuals, but made the chief aim of the state the happiness of individuals--the kind of happiness he himself preferred. Revolutions, he saw, were mostly "due to jealousy, to men thinking they were not so well treated as they deserved to be treated." But when he added that "the smallest thing might be the cause of a revolution," he was thinking of the city-states he knew, in which sudden gusts of anger or alarm might produce uprisings. His warning is not applicable to nation-states, in which revolutions are prepared during long periods as the consequence of deep-seated discontents.

Nevertheless, his advice to monarchies not to be too monarchical, to democracies not to be too democratic, remains sound to-day. His description of law as "reason unaffected by desire" has never been bettered. Upon law he pivoted his ideal state ; no Greek city put his plan into practice, but the Romans may be said to have used it.

LESSON 4

The Political Systems of Ancient Rome

To reach the study of the institutions of ancient Rome is almost to have arrived at modern times; those institutions are familiar to many people, by name at least, and terms still used every day have come down from the Roman system. "Republic" is a Latin word, coined to distinguish government as a public affair (literal meaning of *res publica*) from government by kings or groups of families which treated countries and people as their private estates and dependants. "Fiscal" policy, which decides how much and in what ways taxes shall be levied, derives from the Latin word *fiscus* (a purse). "Salaries" were originally the subsistence allowances paid to servants of the Roman senate and people (literally, salt money, from *sal*, salt). The word "municipality" is derived from Latin words meaning "to take on official burdens," that is, of managing the affairs of a city or town. These few examples show the influence which the politics of Rome have had upon later systems of government.

Patricians and Plebeians

Most states having an upper house or second chamber, in addition to an assembly elected directly by the people, use the Roman term senate for it. A senate (from *senex*, an old man) was a council of elders of the kind which existed from very early times. The Romans developed it (up to the 1st century B.C.) into a patrician instrument for ruling which in efficiency and honesty has, in the opinion of historians, never been surpassed.

The patricians, the upper class or "old" families, claimed, and for a long time exercised, the sole right of governing and of interpreting the will of the gods. The unprivileged, the plebeians, struggled hard before they broke down the class barrier; eventually they were allowed to elect tribunes to look after their interests; to curb the tendency towards aristocratic mob violence, it was made a serious crime to attack these officials. Marriage between members of the two classes was at last permitted, which had some effect of abating class hatred and uniting the Roman people. The Laws of the Twelve Tables, one result of this unity and the first real codification known to history (somewhere about 450 B.C.), were based mainly on customs long practised by the plebeians. There was about them that air of common sense which always marked the institutions of Rome.

For the first time a system of living was rooted in the essential decency and sagacity

of the plain man. Roman institutions, very different from those of Athens, had more to teach posterity. Those institutions broke down under the strain of long and ruinous wars, the corrupting influence of sudden vast wealth, and the selfishness which led individuals to seek their own interest before that of the state; but they were strong enough to bear propping up and to last for hundreds of years more.

An Aristocracy Based on Merit

When the republic rose to the height of its power and prosperity, government had long ceased to be a patrician privilege; the senate was recruited from all who served the state exceptionally well. An aristocracy based on merit instead of birth grew up. Of the two consuls, elected for periods of 12 months, one had to be of plebeian origin. It was hard for men of lowly origin to reach high positions in the state, but there was no legal bar to their becoming even censors, an office even more sought after by the ambitious than the consulship itself.

The duty of the censors was to guard the legal right of every citizen to vote and to claim the state's protection, and to make sure that he paid his taxes and served in the army when called to do so. Censors also controlled admission to the senate, and by setting a high standard they brought into being a code of honour which made the Roman name respected throughout the world. They could inquire into any scandal, any charge of dishonest dealing, cruelty to children or slaves, neglect of duties in any direction; when they declared anyone guilty of infamous conduct, there was no appeal from their sentence, which was final and crushing and inflicted a religious as well as a civic stigma.

The Senate's Method

Nothing more vividly illustrates the Roman character than this institution of the censorship, whose holders implemented the right of the state to investigate its citizens' private lives. In order to guard against injustice, the censors could inflict disgrace only if they were in agreement. Such caution was inherent in the whole system. Almost every office was duplicated. Holders of office were elected by meetings in the forum. Votes were given not individually but by tribal groups. Sometimes the citizens were assembled for the purpose of deciding other matters, but as a rule the senate carried on the government of the republic, and for two centuries it governed well.

Its method was to take things as they came and to deal with them not according to any theory or prejudice but with regard solely to the circumstances and needs of the hour, and also with the desire to give everyone fair play and, if possible, a good life. With the other city states of Italy, Rome established friendly relations, made them her "allies" instead of holding them down by force, encouraged them to model their constitutions upon hers. To be a Roman citizen was a privilege eagerly sought. Such honours as Rome could give were valued as high rewards.

By the early part of the last century before Christ, turbulence had succeeded tranquillity; discontent led eventually to rebellion. Rome had become an empire, but was trying to make shift with the political arrangements of a city-state. The senate was now controlled by wealthy interests, elections were decided by flattery and bribes, and debts pressed heavily upon the farming community.

A large part of the population was hungry for land to cultivate. Debt repudiation was called for, and the breaking-up of the immense areas of state land in the hands of rich men, who did not always pay rent for them. One after another, reformers tried to remedy the social evils. "Let us return to our old methods," said many; so the senate's powers were increased and those of the tribunes diminished. Then there was a swing-back from the aristocracy to the middle class, but still the prevalence of corruption was not checked. By this time there was an official hierarchy. Officials passed from one post to another. Few, when they reached the top, had any desire or ability to do more than lead a quiet life and let things slide.

Julius Caesar's Work

Things slid until a man appeared who combined vision and imagination with great vigour and complete self-confidence. Under Julius Caesar the Roman empire began to be governed as an empire. Cicero had begged the Romans to "revive the republic." That was impossible. Conditions had entirely changed. Caesar saw this and aimed at meeting the new conditions, but he was murdered when his work had only begun.

John Buchan (1875-1940), in his *Life of Julius Caesar*, alluding to the political changes made when the Roman republic became the Roman empire, wrote: "For the first time in government prejudice was replaced by science, and tradition by reason." These changes were needed; it was impossible for the citizens of Rome to govern all the territories that had been conquered in their name. The Greek historian Strabo (c. 63 B.C.-A.D. 19) expressed an opinion generally held by intelligent observers at the time when he wrote: "It is hard to administer so great

an empire as that of Rome save by committing it to the care of one man, as of a father." He went on to praise the results of the fatherly care of Caesar Augustus, saying that "never had it fallen to the lot of the Romans and their allies (i.e. the Italian cities) to enjoy such abundance of peace and plenty as that which he bestowed upon them."

Provincial Councils

Augustus selected his advisers well. He drew, at least, the lines on which the system was to work. Those who worked it were trained during the centuries which followed. Julius had begun to encourage local government. He saw the defects of centralised administration from Rome. His work was carried on; a system of imperial rule was established. Over each province was placed a governor with carefully defined powers, which it was treason on his part to exceed. He could not now, for example, make war on his own responsibility, as proconsuls had often done. He could not oppress or rob subjects of Rome after the manner of Verres, whom Cicero prosecuted and denounced in a famous speech. Each province was given the chance to make suggestions or complaints at the annual meetings of its council, a body which had no power yet made the provincials feel they were not being ruled entirely from outside, and which kept the central government in touch with local opinion. By these provincial councils the worship of the emperors was diffused throughout the Empire, to be later displaced by Christianity.

Augustus instituted a methodical state budget. He had a survey made of all his dominions and the results set down in a kind of Domesday Book. Thus he was able to fix the taxable capacity of each district. So much had to be paid into the Treasury; no more than that was the governor allowed to extort—a blessed change from the days when governors farmed out taxes and the tax-farmers wrung from their victims as much as they could be forced to yield.

Rise of a Civil Service

At first the finance of the empire was entrusted to an official of the emperor's household, but in time this official and the heads of all departments became public servants, and a civil service came into being. There grew up throughout the empire a huge caste of officials entrusted with civil and military powers, each one with a superior more or less responsible for any shortcomings of his subordinates, all subject to strict discipline, and all armed with some measure of authority over those who were not of the official caste. Here was the beginning of bureaucracy, government by officials, which was to weaken Rome and help to ruin her, and which has taken such a grip on the world to-day.

In one sense the army was the supreme power in the state. The army could make or depose emperors, but few of the emperors had much to do with the actual work of government. That was in the hands of the officials; to them must go the credit for the peace, prosperity, and contentment which for centuries was enjoyed throughout the whole of the Roman world.

All this time the city of Rome was, by a polite fiction, in possession of its ancient republican institutions. The senate still met; consuls, aediles, tribunes, were elected and took office; in the forum the people assembled as of old. But the consuls and senators busied themselves for the most part with civic affairs, while the citizens were powerless to influence the course of events. Yet their city was kept in better order, its appearance improved, the supply of food and water became more regular, amusement was plentifully provided. Augustus and his immediate successors saw that it was necessary to keep the populace in good humour, not in Rome only, but everywhere. In Rome they had more done for them. Doles of corn kept them well-nourished. Arena performances gave them something to bet on. Throughout the empire the bureaucrats aimed at setting up a state which should manage and regulate all forms of activity, make life easy and agreeable, and save people the trouble of thinking for themselves. So far as they were successful in achieving such a state, they contributed to the overthrow of the Roman state by "barbarians" in the 5th century.

The Twelve Tables

What saved the empire from internal discord, without being able to repel external foes, was the magnificent fairness and solidity of Roman law. The law court stood as a symbol of imperial rule wherever that rule extended. For almost a thousand years the Twelve Tables remained the basis of civilization. By one of the ironies of history, the best known and most complete codification—that of Justinian was not published until the Roman empire had been broken up. Compiled and issued at Constantinople in the 6th century, it still serves as the foundation for many legal codes at the present time. Roman law grew out of tribal custom. Its origins were drawn from homely,

everyday experience. There was nothing ideal or philosophical about it. Not until much later than the Twelve Tables did the notion of "natural law" take root in the Roman mind. This led to simplification and plain language, in preference to involved technical jargon.

The chief glory of Roman law lay, not so much in the civil code, applicable only to Roman citizens, but in the Law of Nations (*Jus Gentium*), made up out of all that was common to the various systems in force among the peoples the Romans had subdued. It became the chief instrument by which the first vast and politically developed world state was brought into existence and held together.

Dispassionate Dispensation of Justice

No previous empire had let its subjects know what laws they could invoke for their protection, or what penalties they might call down upon themselves if they injured neighbours or tried to shirk the performance of their undertakings. Never before had there been a reign of law, never the ideal of a dispassionate, equitable dispensation of justice (an ideal that was sometimes almost realized). This novelty in government brought to the fore in public life the lawyers, who have stayed there ever since. Somewhere about A.D. 118 a number of them were added to the privy council of the emperor Hadrian. Henceforward only that council was authorised to make changes in the law.

The growth of this legal system and of other institutions dating back to very early times, yet undergoing gradual development through the centuries, gave the Roman republic and empire its importance in history. The Macedonian empire set up in the Near East after the era of city-states was unimportant, because it did not produce any new political arrangements. Its job was to protect civilization and culture from the attacks of "barbarians." That task was taken up by Rome, until at last the barbarians destroyed her rule. There was no reason, except the differing characters of the Latin and Macedonian peoples, why Macedon should not have ruled as greatly as Rome had done. The Romans in matters of government were the most sensible and competent the world had known up to that time.

LESSON 5

The Feudal System of Medieval Europe

THE break-up of the Roman empire and the overrunning of its territories by Huns, Vandals, Goths, and other peoples from eastern Europe and Asia were followed by a long period of chaos. During the whole of this period—often called the Dark Ages, though

they were not so "dark" as has been sometimes supposed—political progress was stopped. Most of what had been learned was lost. For system there was substituted confusion. Methods of government reverted to the most primitive forms.

One is accustomed to assume that when

countries are conquered, some new political system is introduced or perhaps the old one is continued with alterations or under a different name. It was, indeed, usual for this to happen in Roman times. But the "barbarians," when they swept over western Europe, not only wiped out the machinery of administration which the Romans had set up ; they abandoned their own tribal governing methods. This explains why for so long no new states were founded. A state, a political community, can begin only among people who have a good deal in common. The new and old populations of France, Italy, and Spain, the conquerors and the conquered, civilized and barbarians, had very little in common. If the civilized among the provincial subjects of Rome had been the rulers, they would have clung to Roman methods, and chaos would have been avoided. Because power was in barbarian hands, the Dark Ages were inevitable.

Rise of the Papacy

All through them is to be seen a longing for a new world state, for a re-creation of the Roman empire in some other form. The Papacy, which took over from that empire the leadership of western civilization, tried hard to turn this leadership into political dominion. Hence arose a political conflict which continued for a thousand years. When the Roman emperor Constantine added Christianity to the other religions of the Empire (A.D. 313), as the only means of keeping that Empire together, he made the Church a part of the governmental machine, and so prepared the way for all the Church and State controversies and struggles that have been going on ever since. As long as the Empire was kept together, the Church accepted its subordinate position. After the break-up, the Papacy was able to retain its spiritual authority and gradually to extend it.

Already for hundreds of years the Church had refused to admit the right of the state to interfere in its affairs. Now it began to set up the claim that it was authorised by God to interfere in affairs of state. A pope skillfully took advantage of Charlemagne's ambition to be called Roman emperor by conferring this title upon him.

But the Church now aimed at setting itself above all "earthly rulers." It was willing to recognize the "divine right" of kings. In return for such recognition it claimed their acknowledgement of its spiritual supremacy. Had this exchange been made, a theocratic world state might have been established. But although one pope in the year 1300 got as far as proclaiming himself Caesar, the Papacy fought a losing battle all along. Charlemagne treated the Church as the Caesars had done : it was a branch of his state, subject to his authority, and the stronger among his successors followed

his example. These successors were the titular emperors, chosen by "electors" who were themselves potentates ; they continued either to defy the popes or to knuckle under to them all through the Middle Ages, until the Church's dream of a world theocracy faded away.

If it had been dealing with rulers only, the Papacy might have won. It was always present ; the weight it could enforce was heavy. Rulers came and went ; they might have been intimidated or bribed. What beat the popes and decided the course of political development was the rise of free peoples. Upon the idea of nationality the Church frowned ; nations grew, nevertheless, and national states were founded.

Nation-States in Embryo

During the Dark Ages, and the earlier Middle Ages, these nation-states in embryo were ruled either by patriarchs or by chieftains, or by public meeting or by some dim form of representative assembly. It is known that in England the beginnings of parliamentary government existed in the time of Edward the Confessor (reigned 1042-66), when villages chose men to represent them at shire-moots or hundred-moots. But not until 200 years later was this method of government further developed.

Charlemagne's empire did not last long. It had not the army of officials, the trained legions always handy, the law or the prestige, which made Rome formidable and respected. It brought no new institutions into being, though the appointment of dukes and counts to govern districts had one far-reaching result ; it led to a great proliferation of the feudal system. Dukes were military leaders (Lat. *duces*) ; counts were the monarch's friends (Lat. *comes*, a companion). Sometimes, in conquered territory, the local dignitaries were made governors. Canute, the Danish king who reigned in England from c. 1016 to 1035, divided the country into four parts, making an English earl (Old Scandinavian *Jarl*) responsible for each. When the Normans took possession of the country, the Anglo-Danish earls were superseded by the new nobility. Then began a process which was of general occurrence. From being, as B. E. Hammond puts it in *Outlines of Comparative Politics*, "originally positions of trust existing for the public weal, the dukedoms and countships or counties degenerated into mere pieces of private property or estates of land."

Distribution of Power

Nobles raised their own troops, governed after their own fancies, and became almost local sovereigns, heeding little their allegiance to the king. From him, technically, they held their lands, on condition that they did homage and supplied so many soldiers. Their tenants were bound to follow them to the wars, mounted if

they were well-to-do, on foot if they were poor men. Often the nobles made war on one another, even on the king, and in Europe this resulted in the setting up of a large number of small independent states.

In England, from the days of the Norman Conquest, the king usually enjoyed a degree of power denied to the Continental sovereigns, and as early as 1086, in William the Conqueror's time, it was decreed that all holders of land owed allegiance to the king as well as to their immediate overlord—in other words, the king was the supreme overlord of all his subjects. But it may be doubted whether this provision made much difference in actual practice. Local populations knew nothing about the king; they only felt the power of the local lord. Sometimes he oppressed them, sometimes protected them against enemies and dealt out justice

among themselves. Their dwellings clustered round his castle. Many of his tenants put themselves under his feudal suzerainty by making over their lands to him. This formality laid on him the obligation to defend these lands and the people on them. There was thus a tie of mutual service between landlord and tenant. Each had duties to perform.

The method of government was in many ways like that of the patriarchal system. But feudalism was essentially different from patriarchy. The tribal element was absent. Rulers and ruled made a compact for their mutual convenience. The system did not work very well, for many lords abused their power. But it had advantages, or it could not have lasted so long. Its effects lasted much longer. Respect for owners of titles and large estates can be traced back to the feudal system.

LESSON 6

Early Days of the Mother of Parliaments

GOVERNMENT by public meeting was perhaps more correctly government by a few with the approval of the many. The system of calling the populace together in a political assembly flourished in Greece, was one of the bases of the constitution of Rome, and usually prevailed among Teutonic tribes. It was obviously a system suited only to communities small in number and occupying a small area. To the modern way of thinking, the next step should have been representation. If all the people cannot meet, let them send persons to represent them. But the modern way of thinking is very different from that of the Dark Ages. The men of to-day have been taught political history; their ancestors had to make it.

The Witenagemot

The first step towards the kind of government now familiar almost everywhere was made by the Teutons who settled in Britain after the Romans had left in 410. As the other Teutonic tribes on the continent of Europe seem to have made no such experiment, it is reasonable to ask whether the Angles and Saxons adopted some custom which they found among the British. The Roman occupation of Britain lasted nearly 400 years. But the Romans left nothing of the sort behind them. Unfortunately very little is now known about the native British. The origin of hundred-moots and shire-moots (moot - meeting) is obscure; certainly they were composed of officials (reeve or steward and priest) and of delegates from different centres of population, and their activities were mainly legal. Courts rather than instruments of general government, they continued to

function after the Normans had seized the central power, but they did not develop into anything larger.

The origin of parliament is to be found in the witenagemot, the council of the best wits, the wise; it is not known whether this Saxon institution was supposed to have some representative character. It consisted of the royal family, their principal officers and advisers, the bishops, the earls (landowners on a large scale), and other local officials, such as sheriffs. The witenagemot became, under Norman kings, the Great Council of the realm. This in its turn became the parent of almost all British political institutions.

Facts about the process of development are few and experts far from unanimous. For example, Woodrow Wilson (1856-1924), in his book *The State*, said the outcome of Magna Carta was "that the principle of representation was first introduced into the constitution of parliament, and that the commoners as well as nobles were given seats in the national assembly." Sir John Marriott (1859-1945), another authority, took the view, in *English Political Institutions*, that "the Great Charter, eminently baronial, not to say oligarchical in tone, did nothing to advance national representation." Marriott's opinion is now the more usual. It is thought also that Bishop Stubbs (1825-1901), in his *Constitutional History*, was fairly correct in suggesting that the first summoning of knights from the shires and citizens from the towns was a party move in the struggle between Henry III and his nobles.

In 1265, Simon de Montfort, Earl of Leicester, summoned to the Great Council citizens

from 21 selected towns, and a number of the lower clergy. From both of these he expected support against the sovereign. That was an experimental step in the evolution of parliament; but not until near the end of Edward I's reign did the summons become regularised. In 1295 some 110 towns were commanded to send representatives to what became known as the "Model Parliament." Representative government had begun.

Lords and Commons

The word "parliament" was already in use (it appears in the preamble to an Act of 1275), but centuries were to pass before what is now called parliamentary government emerged. Parliament in modern speech is generally understood to mean the house of commons (though, of course, the sovereign and the house of lords are parts of parliament, too). When a minister consults parliament, he consults in effect the house of commons. When the sovereign dissolves parliament, he or she dissolves the house of commons, since the house of lords is permanent, consisting for the most part of hereditary peers. Division into commons and lords was permanent by the middle of the 13th century. The knights of the shires *might* have joined the lords and bishops; they decided to stay with the burgesses.

Early elections to parliament are obscure. Most members were nominated by sheriffs or local bodies—probably assemblies of knights and freeholders in the county courts. It was often difficult to find men willing to go to Westminster, because of the expense, the trouble, and even the danger involved. There was thus no need for constituencies to choose between candidates.

Later the influence of noblemen and other great landlords was often decisive. For a time what Disraeli (1804-81) called "representation without election" was to prevail. Even the Reform Act of 1832 gave the franchise only to a small number. Yet Disraeli was moved by the extension of voting power to warn the country that it might be exchanging the old plan for "election without representation."

Technically the commons had at first no initiative, and no authority to propose legislation; their earliest power was a say in the amount of money to be granted in taxes. They first asserted themselves by declining to vote money for the king's purposes until he redressed the grievances they laid before him by way of petitions. As kings were usually in need of money, they were usually ready to accept advice, and even to dismiss royal councillors to whom the commons objected; but the commons had no hand in the framing or the promulgation of statutes until the 15th century, when the method of introducing bills in parliament became part of the system. The formal consent of both houses had to be given before the bills became laws.

The "power of the purse" had been asserted by the commons and successfully maintained against the king and the lords as early as 1407, when they complained that a grant of money had been made by the upper house, and secured a declaration that this "great prejudice and derogation to their liberties" should not occur again. From that date the house of commons has resisted, generally with success, all attempts to deprive it of the sole power of voting money for the purposes of government.

LESSON 7

Politics in the Italy of Machiavelli

WHILE England, France, and Spain were becoming political units, and while the feudal system was splitting up Germany into a multitude of independent states, the Italians reverted to the old city-state organization. The Italian cities grew because people gathered together inside their walls for protection; there was no central government, and the break-up of the Roman system was followed by centuries of confusion, almost of chaos. In decaying Rome the Papacy kept some sort of order; here and there robber barons exercised authority over a small area.

The least disorderly government was to be found in the cities—Florence, Venice, Siena, and many of smaller size. Their methods were

neither so effective nor so interesting as those of the Greek city-states or those of republican Rome. The mass of people had little share in them. Power was in the hands of the richer citizens, who usually entrusted it to a small body, such as the Venetian Council of Ten or the eight Florentine Priori.

Dictatorship in Venice

The Ten in Venice (who were really seventeen, because the doge and his six ministers always deliberated and decided with them) could do anything they thought necessary for the safety of the state. They could have anyone removed without open trial or publicity. The council once swiftly put away a doge whose ambition

was to be an independent prince, and who planned to reach that position by having all other authorities assassinated. Within a few hours he was arrested, examined, and executed.

There was also a Venetian senate, at first composed of 60 members and then enlarged, but this had very little influence. Another body, called the Quarantia because it numbered 40, administered the criminal law. There was also a Great Council, which consisted of the heads of "first families" and ranked above the senate. Thus there came to be a cumbrous multiplication of governing bodies, and that led naturally to the dictatorship of the Council of Ten—unless a really strong, determined doge became dictator himself. The populace had no opportunity to express their wishes or to formulate complaints, except by rebellion, but this did not prevent Venice from becoming rich through her seaborne commerce, nor did it weaken the constitution, which remained in force for more than four and a half centuries.

Instability of Florentine Government

The constitution of Florence never attained to any degree of stability. In the constant struggles between Guelphs and Ghibellines (the former being the city folk and the other party that of the country nobles), between the various trade guilds, between the merchant and banking class and the mass of people, the mode of government was frequently changed. No one trusted anyone else. The most elaborate means of averting tyrannical rule were tried, yet a people so easily divided and so irrational in their impulses were always tyrannised over. The merchants and bankers grew rich, the trade guilds flourished, art was encouraged, the city was made beautiful, but its government remained always incoherent and often absurd. For example, the chief rulers, the Priori, held office for no longer than two months, and were incapacitated from serving again within two years. Further, they were chosen by a small number of wealthy men, including the office-holders, so there was a tacit agreement that nothing should be done in the direction of changes. The inability of the Florentines to govern themselves was illustrated also by the arrangement that their *podesta* or mayor should be chosen from some other city, because they could not agree upon or trust any citizen of their own.

It is necessary to keep in mind the history of Florence and that of other Italian cities in considering the famous political work called *The Prince*, by Machiavelli (1469-1527). This was one of three books written by a sincere Italian patriot who was distressed by the state of his country and felt that only an unscrupulous ruler with command of a strong, well-trained army could save it from being conquered by France

or Spain. Few books have stirred up more controversy than *The Prince*; few have been more generally condemned. Most of those who have denounced it overlooked the author's motive; as Macaulay pointed out, they forgot also that Machiavelli was merely putting into attractive literary form a view of statesmanship commonly held by 16th-century Italians. A high official of the Florentine republic, he believed republican government to be the best form attainable; but he believed that a period of firm, pitiless dictatorship was needed to restore Italy to political health. Modern dictators, whether fascist or communist, have felt a similar necessity about their countries, including Italy itself.

Machiavelli and Marsilius

Machiavelli did not shrink from impressing upon his Prince that he must sometimes do what was morally wrong for the advantage of the state. In the 19th century Cavour, during his own struggle to achieve Italian unity, is reported to have said as though consciously echoing Machiavelli: "If we were to do as private individuals what we do as public men, what scoundrels we should be considered!" Machiavelli was not a monster of depravity, as many have thought him. Nor was he a political innovator, although he has often been judged so. He wrote a book dealing with the circumstances of his own day, and in it he accepted and explained, rather than excused, the political morality which he saw practised around him.

There was more novelty and penetration in the theories of an earlier Italian writer, Marsilius of Padua (1278-1343), who put forward the view that all power, whether of kings or popes, came from the people. This revolutionary notion was condemned by all authorities. The object of government, he said, was peace, which the people everywhere wanted; peace he thought more likely to be maintained under the monarchical than under the republican form. Monarchs (said Marsilius) had no divine right; they succeeded their fathers not because they had any valid claim to sovereignty, but because the people found it convenient to let them do so.

Denial of Divine Right

In the same uncompromising spirit Marsilius declared that neither pope nor cardinals had any right to rule the Church beyond that conferred on them by the whole of the members of the Church. In the 14th century this unfamiliar doctrine was accounted immoral, especially by those whose positions were so frankly called in question. Marsilius had been an archbishop, which made his doctrine seem particularly dreadful. He had also been a physician, a lawyer, a soldier, and a politician,

and was perhaps not taken very seriously. No one dreamed that he had suggested a new basis for government which centuries later would become widespread. Few rulers would now assert that they are divinely appointed. The view of rulership as either a privilege or a duty

delegated by the people did not prevail until well into the 20th century, when the German, Russian, and Austrian empires and the Spanish monarchy had been overthrown. It took some six hundred years for the idea of Marsilius of Padua to gain ascendancy.

LESSON 8

From "Divine Right" to Democracy

IT has been said that the feudal system was blown away by gunpowder. Use of that explosive certainly altered the nature of warfare and increased the power of central governments, which were best able to afford cannon and professional armies. Kings were able to dominate their barons; after the reformation they were no longer obliged to admit the supremacy of the popes. Heads both of Church and State, they could do as they pleased, whether in the collection of taxes or the enforcement of a new religion.

The reformation, it is true, let loose a tide of free opinion which eventually turned against kings themselves, but at first it had the effect of making autocrats more autocratic. Henry VIII was the most absolute of all English kings. Elizabeth I would have liked to follow her father's example, but during her reign there began to be an opposition in the house of commons. In the matter of monopolies she wisely gave way, and admitted the right of the house to offer advice on all affairs of state. Whenever queen and parliament disagreed, she came out of the struggle, even though apparently victorious, with her authority and prestige definitely diminished.

Monarchs Responsible Only to God

Her successor, James I, tried to reverse this trend, and to popularise the idea of the "divine right of kings," which had floated vaguely in the intellectual atmosphere of the Middle Ages. Dante had given it countenance in his treatise on monarchy, which advanced the proposal of a world state as the only guarantee of world peace. The notion of divine right which came to the fore during the later part of the 16th century was based on the view that monarchy was ordained by God, that it was modelled on the patriarchal system described in the Old Testament, and that monarchs had no responsibility to anyone but God.

In England such a theory had never been put forward seriously before. So far back as Magna Carta the sovereign had been obliged to acknowledge that he was under the law; the feudal idea based kingly power upon a contract. James's claim to divine appointment was much resented. Moreover he was a foreigner, and the

English parliament was not inclined to be hectorred by a Scot. It doled out war subsidies at short intervals, thereby preventing its own dismissal. If James's son, Charles I, had been as shrewd as Elizabeth I, he would have realised the impossibility of defying the house of commons, which by then was largely a Puritan assembly. But Charles was obstinate and rushed on his fate.

King versus Parliament

The chief point at issue between king and commons was the king's claim to collect taxes which the commons had not authorised. It is generally but incorrectly assumed that this claim had no justification. The controversy was full of dilemmas; its legal aspect is even now far from clear. It will not do to say that the seven judges who pronounced in the king's favour were scoundrels and the five who gave judgment otherwise were honest men. What the king's "prerogative" gave him the right to do had never been closely examined; the commons were determined to make him admit that under the constitution he could obtain no supplies except through parliament.

The Petition of Right—to which Charles assented insincerely and to gain time—asserted the supremacy of law, and asked that no taxes should be levied without the commons' consent, that no man should be imprisoned without trial in the ordinary courts, that no special tribunals (such as the Star Chamber) should be set up, and that the practice of billeting soldiers on the people should cease. What the king's chief adviser, Lord Strafford, aimed at was that his master should "govern as he pleased," and that in order to do this he should raise money as he pleased.

The commons defeated Strafford and compelled his execution, but still the king struggled to free himself from parliamentary shackles. To the Grand Remonstrance, which once more demanded that he and his ministers should keep within the law, he replied with charges of high treason. Then the commons declared that the army must be put under the control of parliament; civil war began, to decide whether the king or the people through their representatives should be supreme, or, to put it in another way,

whether king or parliament should control the rapidly developing machinery of the state.

Three years' warfare ended in favour of parliament; when Charles had been beheaded and Oliver Cromwell had become virtual dictator, exactly the same conflict was going on. Cromwell had no fancy for absolutism, yet he found himself in a position where he could govern only as a despot, holding his own by force. He was at continual odds with parliament, partly because the commons were fractious and unpractical, and partly because he felt that he could govern better by the light of his own reason than by taking their advice. He wanted to keep within the law, he strove to be a constitutional ruler, but England was not yet ready for a complete parliamentary system.

Cromwell took no interest in the abstract theories of government which were beginning in his day to be so much discussed. His problem was to carry on his duties as Protector (which meant dictator) without coming into violent conflict with the house of commons. By refusing the crown he made it certain that England would go back to the point which it had reached when he took office. Though he ruled wisely enough, he contributed nothing towards a solution of the problem presented by the clash of royal and parliamentary pretensions. That problem was picked up after the Restoration precisely where it had been left when civil war broke out, but by then parliament felt more sure of itself; also it found itself opposed by a king more skillful than Charles I. Charles II solved the difficulty of obtaining supplies without the commons' permission by taking money from the French king. It was left to his brother and successor (James II) to goad parliament into proving that kingship of the old pattern was in England a mode of the past.

Hobbes and Locke

How men wavered between two opinions in those days of the Stuart kings can be seen in the works of the political philosopher Thomas Hobbes (1588-1679). In his *Leviathan* he claimed that in order to avoid anarchy, complete authority must be freely used by the state. But the state, whether its form of government was monarchical or democratic, could derive authority only from the people. By a "contract" the people, "seeking peace and security of life," conferred this authority in return for law and order, and, when they did this, they gave up all pretension to limit the powers of their government or to refuse obedience to it, whatever it might order them to do. Much of this idea was borrowed from an earlier French writer, Jean Bodin (1530-1596), who exalted the state in order to give it supremacy over the Church, which he disliked and feared. Hobbes wrote with force and argued with irrefutable

logic, but he based his argument on very doubtful premises. His work is remembered for its style: its matter is mostly nonsensical.

For example, he warned nations that if they attempted to limit the power of their sovereigns, whether kings or parliaments, they would fall back into the "state of nature," which to his mind was utter confusion. To get rid of the sovereign, he prophesied, would be even worse. Yet within 40 years of his writing, the English had driven a king out and set another in his place with scarcely any disturbance and little or no dislocation of daily life.

The *Leviathan* was more a political pamphlet, provoked by the circumstances of the time, than a treatise of general application, and the same may be said of John Locke's *Treatises on Civil Government* (1690), which were intended to justify the revolution of 1688. Locke adopted the fantastic notion of a "social contract," which Rousseau in his turn borrowed and embellished, without making it any the less absurd. By the revolution of 1688 the English parliament finally broke with the idea that kings had any right to rule apart from the wish of a people. This break, it may be thought, had been already made with the deposition of Charles I, but that was an act of violence by one part of the nation only. When James II was deprived of his crown and when that crown was offered to William III (to be shared nominally with his wife Mary, daughter of the abdicated monarch), the act had all the sanctions of legality and was approved of by most of the nation.

The English Revolution

The nation as a whole had no direct or active share in bringing it about. Certainly the people could, if they had wished to retain James, have refused to accept any other monarch; but the representation in parliament of the whole nation still lay far ahead in the future. Voting power was in the hands of a small number, who were accustomed to agree in general because their interests were the same. They wanted to make sure no taxes should be levied without the consent of the house of commons, and to get rid of the permanent military force—the standing army, as it was called—which might enable a king to defy parliament. They did not want the Roman Catholic religion to be reintroduced into England. Otherwise they were content to go on as before. There were few if any "ideas" behind the English revolution; there were only grievances. This fact made it an event entirely different from the French revolution. It was a measure of practical necessity. Certain changes ensured the safety of property and personal freedom, but no disposition was shown to go any further. For this reason it succeeded in its strictly limited aims, while the French revolutionaries, with their

heads full of ideas, prepared the road for a return to despotism.

In England the king was now definitely a part of the constitutional system—and not the most powerful part. That consisted of the three estates (a word which originally meant political classes)—the lords spiritual, the lords temporal, and the commons; of these the commons soon established itself as the predominant partner. If it seems absurd that the archbishops and bishops in the upper house—sitting there on sufferance, since the Church they represent ceased long ago to be the church of the whole nation—should be given this prominence, it must be remembered, first, that in England nothing has ever been abolished except for the reason that it was a nuisance; and, second, that the spiritual peers have, as a body, never in modern times exercised, or even tried to exercise, any separate influence on law-making or administration.

No appeal to logic, or to common sense, has ever caused changes in the English constitutional system. If the constitution were a document which could be appealed to, a sealed pattern into which all acts of government had to be fitted, the history of that system would have been different. The smoothness of working which has so far distinguished it above all others is chiefly due to the readiness of the English to let what is old remain so long as it is not harmful, and to remove harmful practices by roundabout rather than direct methods.

A good example of English method was the device by which the houses of parliament made it impossible for the king to keep an army in being without their consent. By passing only for the space of one year the Mutiny Act, which is necessary for the enforcement of military discipline, they obliged the king to call them together at least once a year, and left themselves free to withdraw the measure if ever tyranny were to be once again feared.

Bribery and Corruption

Parliament remained unchallenged at the head of the state for three-quarters of a century. That was less because the house of commons showed any real talent for governing than because the so-called sovereigns were not in a position to challenge it. The first two Georges could hardly speak English and knew little about English ways. They left politics to their ministers, and their ministers managed the house of commons, chiefly by the method of bribery. The big interests, the great land-owners and wealthy corporations, controlled elections to parliament, and before long they began to provide funds for buying the votes of those whom they had made M.P.s. Sir Robert Walpole in George II's reign was the first to spend large sums in that way. By this means

he kept in office the first Cabinet that had ever been formed; and so useful was the evil practice found that it prevailed for a long time.

George III is said to have "dined off boiled mutton and turnips in order to corrupt the house of commons" and win members over to his claim that the king's will should be supreme. A political pamphlet written to please his father had left on his youthful mind a deep impression. This was Lord Bolingbroke's *Idea of a Patriot King*. But George III fell into imbecility, and from the sons who succeeded him on the throne parliament had nothing to fear. It regained its reputation, lived down the odium of bribery, and grew strong enough to clench with and defeat the lords on the question of what was called all through the 19th century "reform."

This meant reform of the voting arrangements, which by the early years of the century had become altogether inadequate to secure a representative house of commons. The admission of members from Scotland and Ireland, when these countries united in turn with England to form Great Britain (1707) and the United Kingdom (1801), had further confused matters. A demand arose for the removal of anomalies. The new merchant and manufacturer class insisted that constituencies with handfuls of voters should be disfranchised in favour of populous cities. This meant breaking the power of the aristocracy to fill the commons with its nominees. The house of lords, and the Tory party in the commons—which consisted mainly of nominees—obstinately opposed the Whig proposals.

Opposition Parties

Whigs and Tories were the parties into which politicians divided during the 18th century. The names had come into use earlier, at the time of the agitation in 1679 to exclude James, Duke of York (later James II) from the succession to the throne. Whig is said to be derived from the Scottish Covenanters, called opprobriously Whigamores, who were bitterly opposed to James; the original Tories were half-savage Irish robbers who came into prominence during the Protestant massacres of 1641. Both words were therefore originally terms of reproach, but "Whig" was soon generally used to describe those who took the chief part in the 1688 Revolution and "Tory" those who opposed them. The sobriquets gave place, early in Victoria's reign, to Liberal and Conservative.

The struggle between the parties and between the two houses over reform seemed to threaten civil war. For more than a hundred years the commons had been the dominant chamber; during that time their power had never been so tested. They won only by securing from the king (William IV) a promise to swamp the lords' opposition by creating new peers

favourable to the government. Thus in 1832 the wealthy middle class was admitted to a share of the political power hitherto monopolised by the aristocracy.

Immediately agitation began for extending the franchise further. The Chartists demanded manhood suffrage, which was also part of the politico-philosophical programme put forward by Jeremy Bentham and his Utilitarian school. That programme, based on the principle that government should exist for "the greatest happiness of the greatest number," included also

payment of members, vote by ballot, and several other proposals which have since been adopted. The propounders of Benthamism failed to persuade the nation that there ought to be a complete change in modes of election, but in 1867, 1884, and 1918 Acts were passed giving the vote to larger and larger numbers, until, in 1929, almost all adult men and women were enabled to take part in electing members of the house of commons. The nation is now the electorate. So far as voting is concerned, democracy prevails.

LESSON 9

Political Theories of Bentham, Marx, and Hegel

THese Lessons have shown how the human race has advanced towards what Abraham Lincoln (in his Gettysburg Address, Nov. 19, 1863) called "government of the people, by the people, for the people." The methods of this government ("by the people") were established in England before the object of it ("for the people") had been fully grasped even by reforming minds. The same is true of other countries. More attention was paid everywhere to the machinery of the popular vote than to the work it should be set to do. A detestation of monarchy and aristocratic domination, rather than a clear desire to benefit the people as a whole, accounted for the move in a democratic direction.

But towards the end of the 18th century a new turn was given to the wheel of change. The theory was evolved that the aim of popular government should be identical with that originally professed by kings, namely, the greatest happiness of the greatest number. This principle had not for a very long time been associated with kingly rule, which nevertheless had interfered in a great many ways under pretence of securing the general good, but in reality almost always for selfish reasons.

Utilitarianism

Jeremy Bentham (1748-1832) was not the inventor of the phrase "greatest happiness of the greatest number," but he did base upon it a system called by the ill-sounding name Utilitarianism. At the heart of this system was the demand that every institution should be judged by its utility. If it served a useful purpose, that is, if it contributed to the general good, it was justified; otherwise it should be demolished. Bentham was provoked to write his books by the foolish praise poured on the British constitution, especially on its legal side. He wrote them at a time when the "condition of the

people" question was beginning to disturb sensitive minds. He was one of the pioneers of liberalism not British party Liberalism, but the wider European movement which so much influenced government during the 19th century.

Philosophic Radicals

In England, Bentham was followed by the Philosophic Radicals, with John Stuart Mill as the most famous. They wanted as much liberty as possible. They reacted vigorously against the "interference" of rulers. They wanted people to be allowed to "go their own way." *Laissez-faire, laissez-aller* was the motto they borrowed from France; and the masters of the new mechanised industry, who were most anxious to be left alone, took up the cry for liberty: to them it meant liberty to pay low wages, to employ women and small children for the longest hours possible, to crowd their workers into unhealthy sheds packed with dangerous machinery. Against this interpretation of liberty the Radicals could not but protest, and they were soon committed to the support of a fresh set of "interferences," which ran counter to their severely logical and therefore unreal attachment to abstract liberty.

J. S. Mill, after producing a treatise to prove that freedom of thought and speech and action was the most desirable basis of government, later in life became a socialist, presumably prepared (though he never said so) to make social well-being the paramount aim, even if it involved restrictions on the liberty of the individual. Socialism was then an infant creed. It grew directly out of the Benthamite doctrine, yet went far beyond that in its demand that the state, representing the will of the whole people of a country, should manage everything for their benefit.

The German philosopher Hegel was a long way ahead of any previous political theorist in

his glorification of the state and in subordinating individual interests to those of the community. It was he who restarted the conception of a state as a thing in itself, and set ideas in circulation which have produced some of the most resounding events of the 20th century. What really had some claim to originality was the belief that the state should extend its province and either regulate or actually carry on industry.

Governments had in the past attempted to control more or less completely both industry and trade. What was called the mercantile system aimed at securing as large an inflow of gold and silver as could be made possible by selling goods abroad. From the close of the Middle Ages to the early 19th century the principal European countries aimed at increasing their exports, restricting their imports, and being paid the difference in precious metal. This was known as a "favourable balance of trade." Any country that bought more than it sold, and had to pay away gold or silver, was said to have an unfavourable balance. As exports of industrial products were in general more profitable and more easily marketed than primary products, the state gave encouragement to industry.

Taxation Aims

The motive of this encouragement was not so much the advantage of the nation as the advantage of the state—in other words, of the monarch, nobles, and state officials. Manufacturing required a larger population than agriculture; states thus had more people to tax, and could tax rich merchants more heavily than owners of land. They therefore did all they could to keep up the bulk and quality of exported goods. They taxed imports so that home industries should be protected, and tried by commercial treaties to get specially good terms in foreign markets. Colonies were forced to exchange their raw materials for manufactured articles from the parent-land.

This economic system had some good effects and some bad; the same was true of free trade. Supporters of socialism went very much farther than believers in the mercantile system had ever gone in demanding control of production by the state. They argued that all means of production—that is to say, all factories and workshops, all machines, all mines and farm lands—should belong to the people, and should be worked for their benefit. By "the people" was meant those who worked for their living. No others were to be tolerated in a socialist state. This arrangement was advocated by Saint-Simon (1760–1825) in France, with the addition that everyone was to contribute to the common stock according to his ability, and be supplied from the common stock according to his needs. In England, kindred

ideas had been put forward by political idealists (by Sir Thomas More, in his *Utopia*, and James Harrington in his *Oceana*) and by others. In Germany, the efforts of several writers to interest the world in socialism culminated in the work of Karl Marx (1818–83). Marx did most of his writing in London, where he lived as an exile for the last 34 years of his life.

Disciples of Marx

Marx was a middle-class German Jew. Editor of a newspaper, he bitterly attacked the autocratic Prussian government, and was forced to flee to Paris. His writings were too radical for the French government also, and he was ordered to leave the country. Marx's principal works are the *Communist Manifesto*, published in collaboration with his friend Fredrick Engels, in 1848; and *Capital* (German: *Das Kapital*), a work in four volumes on which he spent the last 20 years of his life.

Marx's writings were voluminous and his style was not always clear. Those who attempt to work out a detailed plan according to his precepts often disagree as to the meaning of certain passages. This fact helps to explain the many divergences of opinion among socialists all of whom claim to be the true disciples of Marx. Each group has its own interpretation and calls the other groups heretical; Communists usually call them "deviationists." The chief claimants to be genuine Marxists are the U.S.S.R. and the communist parties all over the world which support Soviet policy. Of the non-conforming group, the outstanding example is Yugoslavia, which in 1947, under Marshal Tito's leadership, broke away from the Soviet-dominated "satellite" states in eastern and south-eastern Europe, to pursue a distinctly national and novel form of communism. Tito and his supporters claimed to be the true heirs to the Marxist concept of the socialist state.

Economic Determinism

Marx maintained that the most important factors in determining action, either individual or social, are economic. This theory he called *economic determinism*. His philosophy presents history as a succession of struggles between different social classes, one class gaining power and exploiting the rest until it in turn is ousted from power and exploited by another. This sequence of events is known to socialists and communists as the *class struggle*. The bourgeoisie have displaced the landlords and aristocrats as the ruling class and exploit the property-less workers, the "have-nots" or proletariat.

Marx affirms that all economic value is created by labour. As capitalism develops, more and more capital is needed to set a labourer to work. But the workers receive as wages only

the amount necessary for bare existence, although they produce more goods than are necessary for this purpose. The difference between the amount paid to the workers and that which the capitalist receives for the goods produced is what Marx calls *surplus value*—the source of capitalist profits.

In a world of constant industrial expansion the tendency is for the small capitalist to be absorbed by the greater capitalist, who consolidates his power by formation of a trust or cartel. This process of absorption; the periodic crises caused by over production with resultant unemployment and misery; the constant addition to the ranks of the proletariat from the rural population; the displacement of the small artisan and craftsman by the mechanical means of production of major capitalist undertakings; all these features of the capitalist system and the inevitable rivalry as between national groups will increase as time goes on. Out of these international competitions develops economic imperialism, leading to world war and, in the end, to the collapse of the capitalist system. It will then be for the proletariat to seize from the capitalists the means of production, distribution, and exchange.

The Communist Manifesto

Marx called himself a communist; the term socialist was commonly used to denote the more utopian thinkers, whom he despised as sentimentalists. He claimed to show by scientific processes that the laws which led to the establishment of the capitalist system would bring about its downfall. These laws he called the "contradictions of capitalism"; they are the tendency of capitalism to defeat itself by producing more than it allows society the means of consuming, and the tendency to fill the world with rival capitalist interests and so to destroy a capitalist country's power to sell abroad the surplus products which cannot be consumed at home. Marx appealed directly to the workers in the *Communist Manifesto* to organize themselves and to campaign for reforms which

would be steps towards the communist state. The closing words of the *Manifesto* are: "The proletarians have nothing to lose but their chains. They have a world to win. Workers of all countries, unite!" It has been the principal slogan of communists ever since.

Revolution Misinterpreted

The word revolution, as used by Marx and other socialists, has often been misinterpreted. In the socialist sense it means merely the change from private to collective ownership, not implying violence or even the use of illegal methods. To communists, syndicalists, or Trotskyites, it means the overthrow of the capitalist system by legal or illegal means, either being justified to seize power and set up the dictatorship of the proletariat. In Britain the socialist movement sprang from the radical movement. In 1881 the Democratic Federation was founded; three years later it became the "Social Democratic Federation," the first socialist political body to exist since the days of Owenism in the first half of the 19th century. The Federation derived its inspiration from Marx, relayed through his most eminent English pupil, H. M. Hyndman.

The Fabian Society, formed in 1884, was non-revolutionary, and specifically abandoned such general principles as abolition of the wage system or the right to the whole produce of labour. It was almost wholly a middle-class body, and its period of power was to begin in the next decade. In 1893, Keir Hardie and a number of active socialists formed the Independent Labour party, which greatly increased the influence of socialism in Britain, and for a while held out hopes of practical action to a great number of workers who were unable or unwilling to support the Fabian programme and considered the strict doctrinaire approach of the Social Democratic Federation to be futile. After 1895 the Independent Labour party fell into a period of decline; it remained on the left wing of the "Labour Representation Committee," founded in 1900, which soon afterwards became the official Labour party.

LESSON 10

The Government of Present-Day Britain

THIS survey of the growth of representative government and the development of political thought having reached the present age, its methods of working may now be examined. This working is conveniently studied first as a British institution, because the British example of a democratic system has been widely followed. Other countries have adopted parliamentary forms and instruments evolved in Britain, not because they appealed to the

intellect or even to a sense of order but because they seemed to offer a convenient means of escape from unpleasant conditions. The Germany of the Weimar republic did not succeed in making them work and subsequently abandoned them.

An example of British method is cabinet government. Neither ideal nor even very workable, this method was introduced in the 17th century because the privy council had become

too large and unwieldy. The cabinet now has complete executive power through its control of administration. Its legislative power has become almost as wide; no measure can become law if the government opposes it (i.e. the cabinet). It is difficult for any law to be even proposed except by the government. Gladstone called the house of commons "the solar orb around which all other constitutional bodies revolve." That description was not strictly true even in his day, but now the house of commons is a satellite, its majority following the movements of the cabinet with undeviating, though not necessarily rapid obedience. The house of commons rarely rejects a proposal tabled by the government with a substantial majority, and such measures are seldom amended except in detail. The government controls its supporters by the threat of a general election; that threat usually serves to keep in order those of its supporters that disagree with government proposals. Elections are wearisome and costly; even a sacrifice of principle may be found preferable to turning ministers out.

The Prime Minister

At the head of the cabinet is the premier, or prime minister. He is appointed by the sovereign, whose choice is limited because only one of the leaders of the largest party in the house of commons can be chosen for that office. If the party in question has no one indisputable leader, the sovereign, after consulting leading "elder statesmen," appoints the person who seems likely to secure the greatest measure of party support. This happened in 1957, when Sir Anthony Eden resigned without dissolving parliament, and choice had to be made between Mr. Macmillan and Mr. Butler.

The title "prime minister" dates back to 1661, when it was described as having been so newly translated from the French that "it was not enough understood to be liked." The office of the prime minister took shape gradually and almost imperceptibly after 1714, when the king ceased to attend cabinet meetings. But an early mention of it occurs in 1640, when Charles I's principal advisers were called a cabinet council because they met in the king's cabinet. Under Charles II, those advisers were called the Cabal, from the initials of their names; they formed a kind of inner circle within the privy council.

This expedient was used because the king felt that "the great number of the council made it unfit for the secrecy and despatch which are necessary in great affairs." Development of the cabinet properly so-called can be traced from the reign of William III. That development, a long and intricate process, has made the cabinet of to-day more powerful and less controlled by parliament than at any time since the revolution of 1688.

Bagehot spoke of it in the middle of the 19th century as "the hyphen that joins, the buckle that binds the executive and legislative departments together." Those departments have now been combined, and the cabinet is virtually supreme over the house of commons. How far the prime minister is supreme over his cabinet depends on himself, for he now has the power which once belonged to the sovereign. He can appoint or dismiss whom he will, both within the cabinet and among the larger number of less important ministers who are also "members of the government" but have no responsibility outside their own departments.

The Cabinet

In parliament the ministers are bound to act as one man on all questions relating to executive government. Each conducts the ordinary business of his department without reference to his colleagues, but more important business, especially if it is likely to be the subject of a debate in parliament, is submitted for cabinet consideration. Ministers have a common responsibility to parliament, so that the cabinet must stand or fall together. Any important decision taken by an individual minister is binding on the whole cabinet. Sometimes a prime minister may suggest to a colleague that he had better resign. If his suggestion were not acted upon, the premier would himself resign. The house of commons can dismiss a cabinet by a hostile vote, but the commons, like the prime minister, cannot turn out an unpopular or incompetent single member of the cabinet.

Members of the cabinet usually belong to the same political party; but "coalition" governments, consisting of members of more than one party, are sometimes formed in times of national crisis (as in 1915, 1916, 1931, 1935, and 1940). Not every minister is a member of the cabinet. Holders of the principal government posts, such as the lord chancellor, the chancellor of the exchequer, the secretaries of state, and the first lord of the admiralty, customarily hold cabinet rank, but the prime minister has wide discretion in appointing other members, and the additional posts represented in the cabinet have consequently varied a great deal.

The Servant of Parliament

The principle of collective cabinet responsibility was not established until the end of the 18th century. Sir Robert Walpole, chief minister during 1721-42, is regarded as the first British prime minister. Up to 1905, when the holder of the position was granted precedence after the two archbishops and the lord chancellor, thus becoming the fourth personage in the land, his office was unknown to the law. In 1937 he was granted a salary of £10,000 a year.

"Nowhere in the world," said Gladstone, of

the prime minister's office, "does so great a substance cast so small a shadow ; nowhere is there a man with so much power, but with so little to show for it in the way of formal title or prerogative." Nevertheless, though power has passed from the sovereign to parliament, and thereafter from parliament to the prime minister, he is still, in the words of Sir Winston Churchill, the servant of parliament, and must direct his policy in accordance with the wishes of that parliament. Until the First World War (1914-18) no formal records of cabinet meetings were made, and it was considered improper for any member to take notes of business done or of the arguments used in discussion. But from 1916 there has been a cabinet secretariat.

Government Departments

The origin of the present government departments can be traced to the latter half of the 17th century. After the revolution of 1688, two secretaries of state shared between them the responsibility of looking after all home and foreign government affairs. As the extent and complexity of these affairs increased, so did the number of departments and of secretaries in charge of them ; there are at present seven secretaries of state. An office dating from 1657 is that of postmaster-general. Various more recently-established departments are headed by ministers (e.g. defence ; health ; housing and local government ; pensions and national insurance) ; the one-time president of the board of education is now called minister of education, so that the only "president" left in the government is the president of the board of trade. The government also includes a number of subordinate "ministers of state" attached to the largest departments (e.g. the foreign office) and various other junior ministers--the paymaster-general, the junior lords of the treasury (the office of first lord of the treasury is held by the prime minister), the financial secretaries to the war office, admiralty, and treasury, the parliamentary secretaries, and the parliamentary under-secretaries of state (who assist the secretaries of state).

There are in addition certain ministers not attached to any government department. Chief among them is the lord privy seal, who was formerly responsible for applying the privy seal to important documents ; since 1884 his office has been honorary. The lord president of the council, the official head of the privy council, has almost nominal duties. The chancellor of the Duchy of Lancaster, who represents the Crown in the management of the royal lands that comprise the Duchy, has few if any parliamentary duties. The attorney-general and the solicitor-general, the law officers of the Crown, are the chief legal advisers of the government ; they give advice to ministries on difficult

questions of law, conduct criminal prosecutions in important cases, and defend the rights of the Crown.

It is customary to speak or write of the king (or queen), lords, and commons in that order, but that order is not in accordance with their present-day legislative importance. When a change in the law is made, it is first discussed by the commons, then sent to the lords for consideration, and after being passed by them, is signed by the sovereign. Under the Parliament Act of 1911 any finance bill can receive the royal assent within one month of its having been sent to the lords, even if it is not passed by them. Other bills can be similarly enacted after a delay of one year. The sovereign is bound by the constitution to assent to all legislation presented to him (or her). In theory, commons and lords exercise equal and concurrent legislative powers ; in practice, the house of commons is the supreme authority, being composed of representatives of a self-governing nation.

Election and Dissolution

The house of commons elected in 1955 numbered 630 members. The term "a parliament" refers to the period between the election of a house of commons and its dissolution. The standard period is five years but the government can bring about a dissolution before the expiration of that period. The normal term can also be extended by act of parliament. Thus the house elected in 1910 lasted till 1918 ; that elected in 1935 lasted till 1945. There are normally three occasions on which a prime minister will ask the sovereign for a dissolution : first, if he wishes to introduce important controversial legislation for which his party received no mandate at the previous general election ; secondly, when the government is defeated by a vote on an issue implying that it no longer possesses the confidence of a majority in the house of commons ; third, when the government, towards the end of its normal five-year term, considers the moment auspicious for the winning of another general election. This was the course adopted by the conservative administration of Sir Anthony Eden in May 1955.

The introduction of fresh legislation, and to a less extent the repeal or amendment of legislation already in existence, may be a lengthy and complicated process. Government proposals, or a private member's proposals, are tabled in the form of a bill. The bill receives its first reading, which is little more than a formality, to inform members of the house that the bill now appears on the order paper (the day-to-day "programme" of the house which lists the items to be debated in numerical order) and that copies of it are available for

them to read. Some weeks later comes the second reading, when the principles, not the details, of the bill are discussed. During the committee stage, which follows next, the bill is studied clause by clause, and line by line. Then comes the report stage, when the bill is "reported" back to the house after amendments have been made to it, and further amendments may be proposed. The final discussion stage is the third reading, or a debate on the bill as it has now emerged from the close scrutiny of the house. The bill then goes through similar stages in the house of lords, who return it to the commons with their suggested amendments. Finally, when all points of disagreement have been settled, it is sent to the sovereign and receives the royal assent, whereupon it becomes an Act of Parliament.

The Whip

The maintenance of voting strength is secured by the institution called the *whip*, originally a written summons, now also the name for those members appointed by party leaders to marshal their back-benchers when the house of commons "divides," i.e. votes on any matter before it. The printed summons to attend when an important division is expected is underlined three times, and is therefore called a "three-line" whip. A member who persistently votes against his own party's policy, or who constantly criticises its leadership, may "have the whip withdrawn from him"—a parliamentary term to denote his expulsion from the party. A repenting rebel, or a member who left the party of his own accord, may "have the whip restored to him," meaning that he is re-admitted to the party.

Day-to-day administration of the country cannot be effected by a body of 630 people: it is carried on by a much smaller body, the cabinet. The house of commons retains the right to withdraw its confidence from one set of ministers and put another in its place, but in practice this seldom happens. It would be, no doubt, a not infrequent occurrence if every M.P. voted according to his convictions, and in compliance with the wishes of the majority of his constituents.

In France it has happened with distressing frequency during the present century that a government has been voted out of office by the chamber of deputies (now called the national assembly), the lower house of the French parliament. That is chiefly on account of the many different political parties which exist in France, representing as many different shades of political opinion. No one party is ever strong enough numerically to prevail, and every administration is an uneasy coalition, constantly at the mercy of conflicting trends and liable to rapid disintegration.

The political stability of Britain (as compared for example, with that of France) lies in her having rarely had more than two major political parties at one time, although within each party a wide range of differing views may, and usually does, exist. In the Conservative party, the more progressive wing are called tory reformers or progressives; in the Labour party, the left wing extremists have lately been called "Bevanites," after their leader Aneurin Bevan.

Throughout the 19th century and the first quarter of the 20th the two major parties in Britain were the Conservatives (also called Unionists in the later part of the century, because they objected to the idea of home rule for Ireland) and the Liberals. The Conservatives were what had earlier been called Tories; the Liberals had been Whigs, the word whig being sometimes retained for the right wing of the party when its more advanced members were described as radicals. The Labour party entered parliament in 1906, having won 29 seats in the general election of that year. This was the first independent representation of British labour, which had until then been organized only in the Trades Union Congress (T.U.C.), and politically attached to the Liberal party. As the Labour party grew in strength and power, the Liberal party declined.

There was a Liberal administration during 1905-15. The Labour party held office in 1924, 1929-31, 1945-50, and 1950-51.

Criticisms of the British System

It is easy to condemn the French parliamentary system, with its many parties, but there have also been plenty of critics of the British model. Foreigners find it difficult to understand why the house of commons sometimes calls itself a Grand Committee, or Committee of the whole house; why, when discussing expenditure of government departments, it is called Committee of Supply; why, when financial proposals are put before it, it becomes a Committee of Ways and Means. Many critics also hold that the entire treatment of business by the house of commons is too formal, because in theory the government's party approves of everything it does, while the opposition disapproves of everything. Only when government and opposition both leave their supporters free to vote as they think fit is it possible for members to express non-party opinions. Debates in the lords are often of a higher quality because party ties are less strong there, and members do not have to consider the effect of what they say upon their chances of regaining seats at the next general election.

The main sittings of the house of commons are presided over by the Speaker, whose ancient office is of great importance. Spokesman and representative of the house, he is the guardian

of its privileges, traditions, and dignity. Messages passing between the sovereign or the house of lords and the house of commons are communicated through the Speaker ; he issues writs for the filling of vacant seats, and signs warrants committing to custody offenders against parliamentary privilege. As chairman of the house, he presides over the debates, maintains discipline, and decides points of order. For the last hundred years the Speaker has been independent of party ties, so that he is able to discharge his duties impartially. He is elected afresh at the beginning of each new parliament, and frequently re-elected ; there were only five Speakers between the years 1905 and 1955. Like his medieval predecessors, the Speaker can still claim a buck and a doe twice a year from the royal forests.

A member cannot resign. Anyone who wishes to retire from parliament applies for, and is appointed to, an office of profit under the Crown, which makes it necessary for him to vacate his seat. The offices are two sinecure posts, the Stewardships of the Chiltern Hundreds and of the Manor of Northstead (Yorkshire). Appointed to one of these posts, the member resigns it again as soon as his successor in parliament has been elected.

Functions of the Lords

Since 1911 the upper house - as the house of lords is still called - has had little share in government. It serves as a revising and consultative chamber, its functions being legislative, deliberative, and judicial. In the British legal system the house of lords is the supreme court of appeal. It differs from all other second chambers in that membership is hereditary, and because it is the weaker of the two houses of parliament. The lords spiritual are the archbishop of Canterbury, the archbishop of York, and 24 bishops of the Church of England. Because the clergy are debarred from sitting in the house of commons, it is in the lords that the voice of the Church, speaking through the bishops, can make itself heard. The lords temporal are holders of hereditary peerages of England (created before 1707), of Great Britain (created 1707-1800), and of the United Kingdom (since 1800), together with seven lords of appeal in ordinary, who are appointed to strengthen the house in its judicial character, and rank as barons for life. Since the Union of 1707, 16 Scottish peers not entitled to sit in the house of lords by virtue of one of these peerages are elected to represent their fellows in each new parliament. It was an ancient principle of English law, formally sanctioned by Magna Carta, that a man should be tried by his peers or equals ; in cases of felony, therefore, a lord has the right to be tried by the lords. There are now about 830 temporal peers.

The first great officer of state presides over the sittings of the house of lords ; he is the lord chancellor. He sits on the woollen sack, a crimson-covered seat stuffed with wool, a perpetual reminder of what was once the staple trade of this country. The lord chancellor is a member of the cabinet, in which capacity he is the chief legal adviser of the crown, and he goes out of office when the ministry resigns. He nominates judges of the high court, county court judges, and (except in the county palatine of Lancashire) justices of the peace.

Other Second Chambers

The second chambers of other countries are very variously composed. The American senate contains two senators from each state, elected by popular vote, and has control of foreign relations. The French senate is elected by the " departments " (counties), and is also called the " council of the republic " ; its power of veto is unlimited. Various countries of the Commonwealth have second chambers resembling the French rather than the British. New Zealand has a one-chamber parliament, elected by universal suffrage. In Australia the senate is elected directly by the citizens throughout the (Australian) commonwealth, on the basis of six senators for each of the six original states. In Canada the members of the senate, 96 in number, are appointed for life by the governor-general in council. In actual fact they are the nominees of the prime minister and are appointed on a strictly party basis.

There is a school of political thought which considers a British second chamber unnecessary. Why should a nation with an elected popular assembly submit to a revision, delay, or vetoing of its proceedings by another body ? A second chamber is often held to be desirable as a check on hasty party legislation, but a great majority of the British house of lords is always Conservative, and there is no arrangement for a Labour majority in the lords when there is a Conservative majority in the commons. Failing such an arrangement, the claim that the lords provide a " constitutional balance " is nonsense. The house of lords does, however, constitute a sphere of extended usefulness for " elder statesmen " no longer inclined to contest elections and carry on the exacting life of a member of the house of commons ; it also provides a platform for men of distinction who are not political partisans.

The Strength of the Monarchy

In Britain the feeling persists that the monarchy is necessary both to the homeland and the commonwealth of nations which has evolved from the former British empire. The monarch, still called the sovereign although no longer possessed of sovereign power, has no direct

share in the government. The king (or queen) can make unofficial suggestions as to a desirable course to be pursued ; such suggestions may be sound and timely and may have important results. But he or she cannot do anything that is not recommended by the prime minister. The sovereign has no political responsibility ; the prime minister must bear it all. It is sometimes claimed that the sovereign can still dissolve parliament, select a prime minister, or refuse a dissolution asked for by a prime minister who wants a general election. Against this claim it is alleged that the sovereign is bound in these cases, as in all others, to act as his or her ministers advise.

It is generally agreed that the strength of the monarchy lies in being a social, not a political, institution, and a link between the many and widely different states of the Commonwealth. It is also held that the hereditary monarchy saves the British people from the disturbance of a presidential election, and sets the head of the state above politics and beyond envy or jealousy.

The part played by the Crown has been well described by Walter Bagehot (1826-77), who

said that the king (or queen) has three rights—the right to be consulted, the right to encourage, the right to warn—and added that no sensible monarch would want any others. Constitutionally, the king (or queen) has two important functions : first, to appoint the prime minister ; secondly, to dissolve parliament. In this the sovereign is guided by the advice of the prime minister of the day, though in exceptional circumstances, and with an alternative prime minister at hand who could command a commons majority, he could with propriety act contrary to his official advice. The sequel to a dissolution is an immediate general election, voting taking place on the 17th day thereafter.

The passing of the Statute of Westminster in 1931 abolished the last relics of control by the house of commons in Westminster over dominion parliaments ; the sovereign remains the sole link between Britain and the independent states of the Commonwealth. The queen of the United Kingdom is also queen of Canada, Australia, New Zealand, and South Africa. The ministers in Ottawa, Canberra, and the rest are just as much her ministers as those who deliberate at Westminster.

LESSON 11

Unique Character of the Commonwealth of Nations

PREVIOUS Lessons have surveyed the earliest systems of government and the civilizations bound up with them. In this Lesson attention is directed to that unique concept of government which has developed into an association of free peoples called the British Commonwealth.

British, Americans, French, Chinese, Russians, Germans have each displayed their own ways of approach to problems arising from the administration of colonial peoples. The French, fortunate in being almost free from the acute sense of colour bar which afflicts so many Anglo-Saxons, have ruled overseas territories in a way scarcely distinguishable from that generally exercised in the past by the more civilized nations over the less civilized. They have professed no very high ideals ; their aims have been practical, and their administration mild when dealing with obedient subject peoples.

Russian colonialism has succeeded as a rule because Russians have adopted the social habits of those amongst whom they live ; Soviet administrators of Asiatic territories have respected local cultures and languages. The Chinese, without being such good mixers, use local institutions, giving them a characteristic twist. Americans, many of whom would be

surprised to hear that they had an empire, frequently profess an ardent desire for the uplift of those they rule.

It can be asserted that the British have excelled all others in proclaiming their desire to elevate the people whom they rule and to fit them for self-government. No other people has adhered so obstinately to its own customs when abroad, or so openly tended to regard those over whom it rules as in some or many ways inferior ; but it is generally allowed that British rulers have been respected, their fairness admired, and their competence trusted. They tend to leave their subjects undisturbed in their customs, religion, and political arrangements. Yet the trend is always towards government on representative lines. The usual form of British colonial rule has been made to resemble that of the motherland ; the governor directly represents the Crown, and the assemblies more or less represent the people, some members being nominated, some elected. That is how the self-governing countries of the Commonwealth began to order their own affairs. The method first adopted differed scarcely at all from that by which empires had always been ruled.

But this method had to be revised. The peoples of the British empire were not all of

them conquered or voluntarily subject. They were emigrants from the British Isles, and colonial government of the usual kind was not to the taste of free men born under a constitution guaranteeing freedom. The American colonies revolted in 1776 against the attempt to keep their interests subordinate to those of Britain. That taught the British statesmen a lesson. Their fear of a repetition of that breakaway has led to the liberation of other great countries from almost all the ties that bound them to the mother country. Thus the one-time British empire has been changed into a confederation such as the world has never before contained.

Sir John Seeley (1834-95) spoke of it as having been acquired "in a fit of absence of mind." Of the British nation as a whole that is no doubt true; the phrase applies with equal truth to almost all transactions carried through by the heads of a state in the name of the people. The British nation probably did not realize that it was acquiring vast "possessions" and responsibilities in the wars of the 18th and early 19th centuries, any more than it realized that those responsibilities were being shifted and the "possessive" character changing all through the 19th and the early 20th centuries. But those who directed British policy were in both periods well aware of what they were doing—especially after the establishment of the United States of America. Because those statesmen were sensible enough to understand that lands inhabited mainly, or to a great extent, by British stock, could not be treated as subject territories, the "colonies" peacefully developed into what they are now.

Policy in Ireland

Because the statesmen did not pursue the same policy in Ireland, that country will probably for ever be cited as an example of failure of British colonial rule. The reasons why the treatment of the Irish was different from that of, say, Canadians and Australians were: (1) they were close at hand and therefore might be a source of danger; (2) they were represented in the British house of commons and were therefore supposed to have full self-government; (3) the natives were of a different religion, Roman Catholic not Protestant, and of a different race-group, Celtic not Anglo-Saxon; the emigrants from Great Britain were not all scattered among them and had not the same interests, but for the most part were segregated in the northern part of the island and violently hostile to what the southern part desired.

When, after many years of bitter strife, Ireland became (in 1922) a Free State with "dominion status," but with six northern counties excluded, the root of bitterness had not been grubbed up; and in due time (1949) the Irish chose, as they were now entitled to choose, to

secede from the Commonwealth, though retaining certain privileges of British citizenship. But the six counties of Northern Ireland remained part of the United Kingdom, having their own parliament and also representatives at Westminster.

Commonwealth Members

To-day the British Commonwealth covers an area of some 13 million square miles, or nearly a quarter of the earth's surface, and has a population estimated at 600 million, about a quarter of the world's inhabitants. It extends over five continents and around the seven seas. The flexibility and diversity of this confederation is illustrated by the institutions of its various members; there are differences in background, culture, and social progress, and differences in the relationship of the various partners to Great Britain herself.

Some are fully independent states having no other link with the United Kingdom than a common allegiance to the Crown, and the recognition of the British sovereign as Head of the Commonwealth. Others are colonies, self-governing in domestic matters, subject to certain limitations relating mainly to native affairs; the United Kingdom remains responsible for the conduct of their foreign relations and defence. The term Crown Colony, long used to distinguish between the dependent colonies and self-governing dominions, is now falling into disuse. The foundation stone of the modern Commonwealth was laid by the Imperial Conference of 1926. The next decisive step was the Statute of Westminster, which recognized on December 11, 1931, the status of the dominions as defined by the Imperial Conference.

A Free Association

The Second World War and the participation of the dominions on a footing of complete equality with the Mother Country did more than reveal the strength and viability of the Commonwealth. It showed conclusively to what extent the dominions "had come of age"; and to what degree each of them was capable of developing on the lines best suited to its own needs and particular environment. After the war the Commonwealth underwent yet another significant change. Previously an association of peoples of predominantly British stock, it accepted as members three Asian countries, each of which was in itself a melting-pot of widely different peoples and religions. In 1957 the first native African country was added, when the Gold Coast became the independent state of Ghana. The Commonwealth is now, therefore, a free association of nine sovereign independent states: the United Kingdom, Canada, Australia, New Zealand, South Africa, India, Pakistan, Ceylon, and Ghana.

Of the eight countries apart from the United Kingdom the oldest in terms of political self-determination is Canada, whose status dates back to 1867. The Commonwealth of Australia was established in 1901; New Zealand became a dominion in 1907. The Union of South Africa came about in 1910; its constitution is unitary, like the Canadian but unlike the Australian, which resembles that of the U.S.A., in retaining a "reserve of power" in the constituent states.

In South Africa the existence of two white peoples, speaking different languages, was a difficulty to be overcome. The Dutch were in the majority and, though they acknowledged the generosity of Britain in giving the Transvaal and Orange Free State back to them after the South African War (1899-1902), they were in no mood to surrender any rights they considered to be theirs. As in Quebec, a double-language system was adopted; the adaptability of the Commonwealth idea to special circumstances was again proved of value.

Transition in India

Further evidence of the flexibility and adaptability of political principle is seen in the record of transition in India. There, British rule was imperial. Indian princes governed their principalities under the suzerainty of the British monarch, who was styled Emperor of India. The rest of the vast sub-continent was administered by British officials in India, directed by the British government through the India Office, at the head of which was the secretary of state for India. The British sovereign was represented in India by a viceroy. The 20th century saw increasing dissatisfaction among the Indian peoples with this state of affairs, accompanied at times by serious disorders. Their complaint against British domination was similar to that of the Irish; its justice was recognized by the Montagu-Chelmsford reforms in 1919, and the Government of India Act of 1929, which foreshadowed eventual self-government for India. But the question remained, When would self-government emerge? The Indians wanted independence as soon as possible. The British felt responsibility for the maintenance of order between the bitterly opposed Hindus and Moslems. The congress party, representing the nationalist movement for dominion status, was primarily Hindu, its best-known leaders being Mahatma Gandhi and Pandit Nehru. The Moslem League was formed under the leadership of Mohammed Ali Jinnah. All efforts by consecutive British governments to create an independent sub-continent in which Hindus and Moslems would live side by side as equal partners proved unsuccessful.

The Moslems pressed for the establishment of a state incorporating all those provinces where their co-religionists were in the majority. The

result was the partition of India in 1947 into two separate political entities: India and Pakistan. Both were given full dominion status, which includes the right to secede from the Commonwealth if they so wish. In February 1948, Ceylon was granted independence, thus becoming the seventh member of the Commonwealth of Nations.

Fears and misgivings felt at the time of partition did not materialise. On January 26, 1950, India became a republic—a sovereign and independent state, whose relations with the United Kingdom and the other members of the Commonwealth were defined at the London Commonwealth prime ministers' conference on April 27, 1949. Far from leaving the Commonwealth, India played her full role as a member, recognizing the sovereign as the symbol of partnership and titular Head of the Commonwealth. This happened also in Pakistan, which was proclaimed an Islamic republic on March 23, 1956.

In recent years the policy of associating non-European people with Western ideas of government has been extended to Africa. In 1953, Northern Rhodesia, Southern Rhodesia, and Nyasaland were merged to form the Federation of Rhodesia and Nyasaland, which enjoys a large measure of independence in internal affairs, while the U.K. remains responsible for its external relations. The federation is a loosely-framed political entity where the federal legislature deals only with matters of common interest, leaving the purely territorial affairs to the individual legislatures concerned. The statute of the federation makes special provision for safeguarding interests of the Africans.

Changed Relationship

Ghana, as has been said, became an independent member of the Commonwealth in 1957. The process of giving the native peoples a greater share in their own affairs was also observed in varying degrees of advancement in Nigeria, British Honduras, and British Guiana. In Central America plans were in hand for merging the West Indies with other islands into a Caribbean federation. A similar process was under way in Malaya, where active steps were being taken to prepare yet another Asian country for membership of the Commonwealth.

An outward sign of the changed relationship between the homeland and the overseas territories is the alteration in the style of the ministers and ministries in charge of overseas affairs. In 1947 the secretary of state for dominion affairs became the secretary of state for Commonwealth relations, his department being re-designated the Commonwealth relations office. This department conducts relations with all the governments of commonwealth countries, and with the Irish republic (Eire). Eire ceased

to be a member of the Commonwealth on April 18, 1949, when the Republic of Ireland Act came into force ; nevertheless, the United Kingdom and Eire do not regard each other as foreign countries. The status of their nationals residing in each other's territory, as well as trade, employment, and other matters are governed by a series of special conventions. The only other country to decline membership of the Commonwealth was Burma which, from being a British colony, became an independent republic on

January 4, 1948. The protectorates and trusteeship territories which Britain holds in trust for, and under a mandate given by, the United Nations, range from the High Commission Territories, in South-West Africa (Swaziland, Basutoland, and Bechuanaland), to Aden, on the Red Sea, and Kuwait, on the Persian Gulf. These areas are held by Britain in trust for the peoples who inhabit them, peoples who are gradually being schooled in the arduous tasks of self-government.

LESSON 12

Constitution of the United States of America

THE advancing cause of political liberty, the liberty of nations to decide how they would be governed, made changes elsewhere than in Great Britain. The most complete, as well as the earliest, of these changes was made when the North American colonies of Britain declared their independence on July 4, 1776, and established themselves as the United States of America. Their constitution represents one of the finest efforts ever made to put down in one document everything necessary to secure good government. Its merits are sufficiently obvious ; its defects can be attributed to the impossibility of doing what its authors aimed at.

The "Founding Fathers," as they are called in American history, assumed that the state of the world and human nature (or, as it should perhaps be called, public opinion) would remain fixed. They did not allow for the necessity of growth and development. To suit changing conditions, institutions must go through continuous processes of adaptation. By enclosing their system, by making it as difficult as possible to introduce any change in it, the authors of the American constitution gave it a form as different as possible from the British system. That system vests the paramount governing power in parliament. From an act of parliament there is no appeal. Nothing lies outside the authority of parliament. If it chose, it could abolish the monarchy, close the civil and criminal courts, suppress free speech, break off relations with all other states. It could even decree its own dissolution and leave the country without any government at all.

The Supreme Law

Nothing of that sort could happen in the U.S.A. There the constitution is the supreme law. If congress passes acts that conflict with the constitution, judges can declare them null and void. If the president takes any unconstitu-

tional course, he can be impeached and tried by the senate. So long as the constitution is in force, nothing can throw the government out of gear. The basic difference between the British and American systems is that the one bases itself on the common sense of the moment and the other on a rigid written instrument. One grew like a tree, now putting forth new branches, now dropping dead ones, now spreading its roots, now extending its shade. The other was produced, complete almost to the last leaf, by the effort of unusually fertile and ingenious minds.

The possessors of these minds had studied many modes of government, many constitutions ancient and modern. They were determined to make their work enduring and unassailable, to avoid all the pitfalls which had caused others to stumble. They consulted the works of Milton and of John Locke, of Algernon Sidney, Harrington, and Somers ; as the foundation of their state they took the words of the Declaration of Independence—"that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are life, liberty, and the pursuit of happiness." Their task was to draw up a plan which should guarantee these "rights." Those who wish to know how far the plan succeeded should read American history or look at the America of to-day.

The Machinery of Government

The method followed was that of checks and balances ; the intention was that power must be so distributed among so many people that it could never be abused. The machinery of government was therefore arranged in three separate and almost independent branches, each designed to act as a check upon the other two. The legislative branch consists of the two chambers of congress - the senate chosen by the legislatures of the states forming the Union, and the house of representatives, directly elected.

The executive branch, with the president at its head, carries on, through ministers and civil service, the actual business of government. The judicial branch can revise acts of congress and interpret the constitution even over the president's head.

The President's Powers

In other directions the U.S. president's authority far exceeds that of constitutional monarchs, and of most other republican chief executives. But he has no powers equal to those of a British prime minister with a united cabinet and a majority in the house of commons on which he can rely. The American president cannot himself propose legislation (though he may take executive action which would require legislation in Britain). He cannot even initiate legislation through his cabinet ministers, for they have no seats in congress. He can suggest in his messages to congress that legislation on certain subjects would be desirable; congress may or may not take up the suggestion. When bills have been passed by the two houses, the president can, if he disapproves, refuse to sign them; but if both houses pass them again by two-thirds majorities, they become law. He cannot choose his ministers without securing the agreement of the senate in secret session.

A great man in the presidential office might really govern, but the expectation of the framers of the constitution that men of high distinction would always be chosen has not been fulfilled. They arranged that "electors" should be appointed in each state, either by the legislature or by popular vote (which now prevails throughout the U.S.A.), and that by the "college" formed of these electors the president should be chosen. At elections held in November the "electors" are elected, not the president.

Appointing a President

In theory he is not chosen until the next month, when the electors proceed to their state capitals and cast their votes for their choice. But in fact the November election is the presidential election, because it is unknown for an elector to go back on his party's candidate. The electoral votes are counted in the presence of both houses of congress on the following January 6, and the president so elected takes office on January 20. He holds office for four years, and may then submit himself for re-election. Some U.S. presidents have served a second term. Franklin D. Roosevelt in 1940 and 1944, in standing for a third and a fourth term, broke the long-standing convention—it was nothing more—that no president should serve more than two terms.

The makers of the constitution believed that this deliberate method of appointing a president would (a) avoid the dangerous excitement of a

direct popular election, and (b) secure the choice of an exceptionally able and high-minded man. They did not foresee such a hardening of the party system as soon took place. "The good party men" often selected by the party bosses, may or may not prove good presidents.

Nor is the level of character and ability necessarily high among members of the house of representatives, partly because opportunities of winning distinction are few, partly because there is so much local feeling in America. Men known in their home towns or their country districts are almost always preferred to men of note from elsewhere; consequently the lower house consists mainly of men with small local reputations. As, however, its decisions are seldom of the first importance, this does not greatly matter. Congress cannot turn out a ministry, as some parliaments can. There are no leaders; there is none of the day-by-day real conflict between ministers and opposition which gives proceedings interest elsewhere.

With the senators things are very different; theirs is the strongest upper chamber in the world. It is a small body consisting of two members from each of the 48 states; the term of office is six years (in the lower house it is only two), and senators have time to learn their very important business. The U.S. senate is supreme in all matters affecting the relations of the United States of America with other countries. No treaty can be made without its approval. This gives it control of foreign policy, for, although the president, who is *ex officio* commander-in-chief of the army and the navy, can do much in that sphere as chief executive—he can, for example, order movements of warships or troops—he cannot afford to quarrel with a body which can bring his aims and undertakings to naught. Further, the senate has control over all important appointments. Formerly it was the practice to appoint holders of federal offices according to their politics and to turn them out when their party suffered a defeat, but this arrangement has now been greatly modified.

The Judicial Branch

As to the third branch of the government, and its power, through the supreme court, to veto unconstitutional measures, no more need be said than that a president and a congress, acting together could if they chose overcome that veto. Congress could legislate for more judges. The president could appoint men who would do what he wanted. Here again is proof that a written constitution, however perfect it may seem to be, cannot provide against all the wiles of politicians.

If the constitution-makers could review their instrument to-day they might revise the form of compromise between federalism and a national government system now in use. The separate

states have extensive sovereign powers ; at the time of union no state was willing to give up any of them. The working of the two forms of government was described by James Bryce (1838-1922) in *The American Commonwealth* as that of a "great factory wherein two sets of machinery are at work, their revolving wheels

apparently intermixed, their bands crossing one another." Bryce spoke of "each set doing its own work without touching or hampering the other," but that does not always happen. For years President F. D. Roosevelt's "New Deal" plans were thwarted or delayed by reactionaries on the bench of the supreme court.

LESSON 13

Communism on the Russian Model

AMONG the many great changes brought about by the First World War was the collapse of empires, the governing classes and the administration in Germany, Austria-Hungary, and Russia. The old type of imperialism was replaced by systems of government which, after uneasy experiments, became equally or more totalitarian in practice, but with different elements of the population in charge, and new justifications for tyranny in the shape of the philosophies of communism and fascism.

Up to 1914, the Russian tsar, the German kaiser, and to a lesser degree the Austrian kaiser (who was king of Hungary), were not only "supreme war-lords" but also dominated their civil governments.

There were parliaments in Berlin, Vienna, and Budapest, which might influence but could not decide the course of events. The duma in St. Petersburg was no more than a debating society ; the tsar summoned it when he chose, and dismissed it if and when it began to be too critical or too inquisitive for the comfort of his officials and courtiers. These three empires, ruled in the old monarchical fashion, gave their peoples no chance to acquire political experience. Military defeat resulted in their being violently swept away.

Economic and Financial Dislocation

Germany became a parliamentary republic. Severely handicapped by the peace treaty of 1919, its constitution worked badly ; in 1933 even the pretence of parliamentary government was abandoned and a fascist dictatorship set up. Austria lost much of her territory in the peace settlement ; from being one of the Great Powers she was reduced to a small state, politically and economically incapable of standing on its own feet. Economic and financial dislocation hampered the development of the new republican institutions. Austria would almost certainly have joined in an *Anschluss*, or political union, with Germany but for the opposition of France. Internal instability favoured the growth of extremism and political reaction. The fascist *Heimwehr*, under the leadership of Prince Starhemberg, aimed at turning Austria into a replica of

Mussolini's Italy ; the Austrian Nazi party, under Seyss-Inquart, sought union with Nazi Germany. On the political right was the Christian Social party, Catholic and including monarchist elements which sought the restoration of the house of Habsburg ; on the left was a powerful socialist movement. Armed clashes between the para-military organizations of these parties were frequent.

Friction, unemployment, and foreign interference combined to aggravate a critical state of affairs ; the increasingly dictatorial policy of the federal chancellor, Dollfuss, and the rise of right-wing extremism, culminated in a socialist uprising in February 1934 ; with the help of the army and the extreme right Dollfuss subdued it after bitter fighting. For another four years Austria existed as a more or less fascist state, rent by conflicting factions. In March 1938, Hitler invaded Austria his native country- and incorporated her with the Greater German Reich.

Drastic Changes in Russia

In Russia the change was even more drastic. A popular uprising, lacking in preparation and leadership, overthrew the tsardom in March 1917 and substituted a more democratic form of government headed by a lawyer, Alexander Kerensky. Kerensky rallied to his cause a high proportion of the Russian intellectuals and middle classes, who had grown dissatisfied with the prevailing corruption and mismanagement. The democratic administration disregarded both general war-weariness and the land-hunger of the peasantry ; the men at the head of affairs were inexperienced, and lacked a clear-cut policy or programme.

After seven months a second revolution (November 7, 1917) transferred power to the Marxian communists. For months the communists had been busy setting up soviets (councils) of workers, peasants, and soldiers, in cities and country districts ; their influence grew out of all proportion to their number, so that they carried out their insurrection with very little bloodshed. But it was followed by a costly civil war, lasting four years, in which the new masters of Russia fought the counter

revolutionary or "white" generals and their armies, the latter being supported by almost all of Russia's former allies in the First World War.

The strength of the Bolsheviks lay in the intellectual vigour, ruthless determination, and clear-headed vision of their leaders, Lenin and Trotsky in particular, who had studied the technique of revolution for many years. Bolshevism, an offspring of the left wing of the international socialist movement, was first organized as a radical fraction of the Russian social-democratic party, led by Lenin. In 1903, a party split separated the bolsheviks from the moderate wing called the "mensheviks." The bolsheviks under the leadership of Lenin seized power in November 1917, and they have been called "communists" ever since. Their rise to power afforded an object-lesson in how a determined minority can conquer a powerless majority, and set the pattern for the communist coups in the eastern European countries immediately after the Second World War.

Establishment of Soviets

The communists created a framework of democracy, but did not even pretend to be democratic in their proceedings. They proclaimed, as Marx had done, the need for a "dictatorship of the proletariat," but as the proletariat itself could not be expected to run the country, the "militant vanguard" (the communist party) must do it for the proletariat. Lenin, the leading figure in the new government, admitted that the dictatorship of the proletariat was in fact the rule of a determined and conscious minority.

There was no attempt to copy the parliamentary institutions of western countries. To a considerable extent the new system was based on the communes which for centuries were the predominant form of local government in Russia. In town and countryside a vast number of soviets or councils were established; under the constitution of 1923 these constituted a hierarchy of electoral bodies. Soviets in villages, urban factories, and workshops, and professional groups, formed the base; these elected district soviets, the members of which chose regional soviets, and so on, by a system of indirect election, up to the level of the All-Russian Soviet Congress. As the peasants were far more numerous than the town workers (the proletariat proper: the word "proletariat" comes from *proletarius*, the name given in ancient Rome to a member of the lowest class of society, so poor that he could serve the state only by producing *proles*, offspring), and also were not so politically conscious, they were given fewer votes in proportion.

The bolsheviks established a totalitarian regime; they swept away all that was liberal and democratic, substituting the one-party state

The land was shared out to the peasants; all industries were nationalised. Once in the saddle, the soviet leaders evolved two policies, which, for all their outward differences, were in fact, complementary. The first, called "socialism in one country," sought to modernise Russia's backward agriculture and industry through a series of Five-Year Plans, so as to bring her rapidly up to the level of the great industrial powers that were quite fifty years ahead of her. The second sought to promote a social revolution on a world scale, consistent with the ascendancy and designs of the soviet rulers.

Promotion of World Revolution

The policy of promotion of world revolution was very much to the fore after the Second World War, during which the U.S.S.R. suffered grievous losses, but from which she emerged in control of a dozen countries in both Europe and Asia. Up to 1955 this policy was the guiding principle of international communism, whose identical form in different countries is commonly called the "party line."

A result of the policy was the momentous division of the world into communist and anti-communist camps. A further result was the coming into existence of a host of international organizations, some of them military, e.g. N.A.T.O., the North Atlantic Treaty Organization, and S.E.A.T.O., the South-East Asian Treaty Organization; others economic, e.g. O.E.E.C., the Organization for European Economic Co-operation, E.C.A.F.E., the Economic Commission for Asia and the Far East, and others whose function is primarily to raise the standard of living in backward and under-developed areas of the world. The ability and resolve of the West to meet the soviet challenge compelled the leaders of the U.S.S.R. and communist China to change their tactics. The policy of subversion and open aggression (as in Korea and Indo-China), gave place to a more conciliatory attitude expressed in the concept described as "peaceful co-existence." But the fundamental aim of communism as such remained unchanged. Whatever the change in tactics, the communist master-plan aims at establishing the "socialist society on a global scale," in accordance with the doctrine of Marx, Lenin, and Stalin.

The Strength of Communism

The strength of communism is derived from those who are convinced of its truth as a theory of society, and those who, indifferent to the ultimate aims and methods of the party, are living in poor conditions for which other political parties or concepts offer no immediate remedy. This promise of change when change can hardly be for the worse accounts for

the far more ready acceptance of communism in backward countries, especially in south-east Asia and Africa, than in those where the standard of living is higher.

The communist party itself is no mass-movement. Karl Marx, calling himself a communist and defender of the working classes, had nothing but contempt for what he described as "Lumpenproletariat," the German word for "proletarian rabble." In consolidating their régime in Russia, and in the so-called people's democracies, the communists followed the pattern of all authoritarian systems ; executive power was vested firmly in a minority, e.g. the communist party.

Confusion of Terms

The Russian use of the term "socialism" as identical with "communism" sometimes confuses argument in Western countries. Most western socialists believe in parliamentary institutions and more-than-one-party political representation. Communists, while taking every advantage of the confusion, often regard socialists as more dangerous political adversaries than right-wing parties whose ideas of caste and privilege and heavily-policed social order they (the communists) have, so to speak, turned inside out for their own use.

Soviet industry is organized in concentrated units, called "trusts." These are, in fact, joint stock companies, all the stock being held by the state. Nearly 80 per cent. of all industries are controlled by these "trusts." Farming is carried on in "kolkhozes," or collective farms, i.e. groups of farms worked like one, and managed on a co-operative basis, and in "sovkhozes," which are state-owned farms run by state employees with the assistance of state-owned machine and tractor stations. The state is also in supreme control of all scientific, cultural, and literary activities. "Dialectical materialism," the soviet variant of Marxism, known to the fervent communist as "scientific socialism," is the only permitted view ; intellectual activity and the practice of the arts such as music and painting are made to conform to its tenets. Life for artists and composers in a communist state is far from simple ; what was the orthodox view yesterday may be denounced to-day as decadent, degenerate, or bourgeois.

Five-year Plans

Five-Year plans have been a regular feature of soviet economy since the first was launched in 1928. Huge electric power-stations were built, thousands of miles of railways were laid, manufacturing towns sprang up in the savage lands east of the Urals, the most primitive farming methods were suddenly replaced by the most modern ; the industrial revolution that lasted long years in Britain and other Western

countries was telescoped into a minimum of time. The objects of the plans were both political and economic ; namely, to make Russia a great industrial power, and bring all industrial and agricultural enterprise under state direction.

In 1936 a new constitution, drawn up by Stalin, was adopted, whereby the method of indirect election was dropped, and every citizen of 18 years and over was allowed to vote directly for all the soviets constituting the governmental system. The new constitution resembles the old one in its pyramidal form. At the base are 70,000 local soviets ; then, in ascending order, come district soviets, regional soviets, soviets of the republics that form the U.S.S.R., and the supreme soviet of the U.S.S.R. The latter is a sort of parliament of two houses : (a) the council of the union, elected by the people on the basis of one deputy for every 300,000 citizens ; (b) the council of nationalities, representing the constituent republics, autonomous republics, and regions, all of which combined might be called the United States of Russia. As this parliament is not sitting all the time, its work is carried on by the praesidium, or standing committee of 42 members.

The Council of Ministers

Responsible to the supreme soviet is the council of ministers, corresponding to a cabinet. The highest executive and administrative organ of state power, and theoretically responsible to the supreme soviet, it has a very large degree of executive authority. The nominal head of the state is the chairman of the praesidium of the supreme soviet. But the real supremacy belongs to the chairman of the council of ministers, and the secretary-general of the communist party. In Stalin these offices were combined, but after his death (March 1953), they were separated, apparently with the intention and effect of preventing too much concentration of power in the hands of any one man.

The actual policy-making organ is neither the supreme soviet nor the council of ministers, but the central committee of the communist party. This is rather a large body, which in the past proved too unwieldy for efficient day-to-day administration ; therefore the task of framing policy is entrusted to a kind of inner council of 13 members, called the political bureau, or politbureau. The politbureau of the central committee is thus the real master of the soviet union, and the same model of party leadership prevails in all other countries where the communists are in power. The current policies of the communist party in the Soviet Union and those of the communist parties in other countries were co-ordinated by a special agency, the *cominform*, or communist information bureau, with headquarters in Bukarest ; in April 1956

this organisation was dissolved, probably as a gesture rather than as an indication of real decentralisation of policy-making power.

With a membership of only about two million adults (but with millions of young people incorporated in the komсомol and other youth movements), the communist party is thus an all-powerful élite or aristocracy, of which it is not easy to become a member. No one can remain in its ranks who is unorthodox in his or her views, dissolute in conduct, disobedient to orders, or slack in setting a good example (according to the party line) as workers, citizens, even as husbands and parents. To go anywhere, to do anything required of them, is the duty of the party member. This blind obedience to the party and its doctrine is comparable to other examples of religious fanaticism.

Each of the 16 republics of the U.S.S.R. has local governing bodies on the same pattern as the supreme soviet, but the central executive in Moscow has complete control over foreign policy, finance, education, the armed forces, etc.

The soviet economic system might be called "state capitalism." It requires that all industry be regulated, all trade carried on, and all employment given by the state, as the representative of the community. It excludes "the exploitation of man by man." The profit-motive has not been abandoned, but wages are paid on a piece-rate basis varying according to the skill of the individual worker. The more useful he (or she) is, in ways which the state finds it

desirable to encourage, the more he (or she) can earn. Inheritance is allowed, but in excess of a very moderate amount it is heavily taxed.

Since 1945 a number of states within the geographical orbit of the U.S.S.R. have had communist rule imposed on them, mostly through the will of a communist minority. They are Poland, Rumania, Bulgaria, Hungary, Czecho-Slovakia, Albania, and Eastern Germany; all of which are called Soviet satellites. Another communist state, though independent of Moscow, is Yugoslavia. After a protracted civil war, the communists came to power in China in 1949, where they established the Chinese People's Democracy. They, too, sought to protect their frontiers by a string of satellite states; these are Tibet, North Korea, and North Vietnam.

The root-cause of the dangerous hostility which has arisen between the communist-led countries and the rest of the world, especially the Western democracies, is to be found less in differences of political theory than in each side's mistrust of the other's external policy. In most of the communist countries of eastern Europe and Asia the communist system was imposed and is being maintained by force. This fact, combined with evidence of missionary zeal, makes the non-communist countries mistrustful. They regard the relatively new political experiment as accompanied by something hardly to be distinguished from conventional aggressive imperialism.

LESSON 14

Other Totalitarian Systems

THE discrediting of the corrupt, repressive and inefficient tsarist régime by its defeat in the First World War made possible the Russian experiment in social revolution. In many other countries parliamentary government had begun to arouse a measure of contempt, whether it was deserved or not. There was a violent swing-back from the liberalism of the 19th century which had encouraged the creation of so many parliaments.

In some countries this wave of extremist criticism soon subsided; in others it swept ahead with revolutionary impetus. In Italy the mood of discontent lasted long enough to permit an experiment hardly less extensive than that of the Russian communists, to which its beginnings bore considerable resemblance. The movement called fascism (*fascismo*—after the fasces, symbols of discipline carried by the ancient Roman lictors, guardians of public order) attracted little attention outside Italy until 1920. Fascism arose in opposition to the left-wing radicalism widespread in

Italy immediately after the war, and also as an expression of Italian resentment against the small gains obtained by Italian participation in the war as an ally of Britain and France. Two years later the fascist party had become strong enough to carry through an almost bloodless revolution and to instal its leader as head of the government with the powers of a dictator.

Mussolini's Aims

That leader was Benito Mussolini (1883–1945), a one-time militant socialist; in 1914 he became an ardent nationalist and advocated Italian participation on the side of the Allies. These views led to his expulsion from the socialist party. In 1919 he formed his own political movement, first called the *Fasci di Combattimento*, or fighting groups, which made rapid headway in the political chaos of the time. His followers wore black shirts and were trained to obey, without hesitation and without question, any order he might give them.

In October 1922 he ordered some 40,000 of them to march on Rome; they did so, and the authorities, at the wish of King Victor Emmanuel, surrendered the city without a struggle. The titular monarchy was allowed to remain, though Mussolini showed what he meant by his motto: "Authority must be single and undivided." He assumed supreme power, ruled by decree, and became in name as in fact the "duce" or leader. He aimed at subordinating all individual interests to those of the state. His avowed disbelief in the "fetish of liberty," his preference for discipline, blind obedience, and the principle of leadership by the élite, or governing minority, found expression in the suppression of political parties and organized labour, and the introduction of what he called "hierarchy"; by which he apparently meant that everyone should have duties to perform and be compelled, if necessary, to perform them.

Italy as a One-party State

Fascism was anti-liberal, totalitarian, and authoritarian. It was based on the teachings of the French historian, Albert Sorel (1842-1906), and the German philosopher and leading exponent of the concept of the "superman," Friedrich Nietzsche (1844-1900), both of whom had decried the ideas of democratic government and of the importance of the individual. Mussolini's Italy became the second one-party state in Europe. His foreign policy of nationalism and expansion involved the Italo-Abyssinian war of 1935-36, his intervention in the Spanish civil war of 1936-39, the conquest of Albania in 1939, and the declaration of war on Britain and France in June 1940. At home he sought to establish the corporate (or corporative) state, in which trade and professional corporations, not territorial constituencies, were made the basis of political representation. Trade unions, as they are called in Britain and America, were banned; employers and workers were compulsorily organized into corporations, which in turn were grouped in confederations corresponding to agriculture, industry, commerce, credit, and insurance.

National Council of Corporations

The various corporations sent delegates to a national council of corporations, which from 1939, when reinforced by a number of representatives of the national council of the fascist party, constituted the lower house of the legislature, called the chamber of the fasci and corporations. The original lower house, or chamber of deputies, elected by voters grouped in territorial constituencies (as e.g. in Britain) was abolished. The upper house, or senate, was retained, the bulk of its members being nominated by the king for life. To complete

the state machinery, a grand fascist council, consisting for the most part of Mussolini's nominees, a more or less advisory body, was concerned with such matters as the constitution and the relations between Church and state.

The regime was supported by a party militia (*milizia volontaria*), and a powerful secret police (OVRA). It further commanded the loyalty of the women's fasci, a youth movement (*avanguardia*), and a state-supervised boy-scout organization (*ballila*), which enabled it to control all boys and girls of over six years of age. The party's fundamental creed was that "the state is of supreme value, the individual's role is to serve the state." Every member of the party was required to believe, and to act on the belief, that "Mussolini is always right," the fascist's duty was "to believe, to obey, to fight."

When the first attempts were made to launch the corporate state, the duce and his propagandists boasted of its incomparable superiority over the systems of the "pluto-democracies." However, Mussolini plunged Italy into war while the new plans were by no means complete; it was soon apparent that a system which banned free speech and a free press, and relied upon compulsion, had nothing to teach the democracies that was worth their learning. In August 1943 the fascist régime was swept away, leaving few regrets and many bitter memories.

Fascist Doctrine in France

In France the fascist doctrine was adopted by the extreme right-wing movement *L'Action Française*, whose programme was a mixture of totalitarianism and medievalism. Violently Catholic, although for a time condemned by the Pope, this movement advocated restoration of the monarchy, the union of king and Church which characterised the France of the Bourbons, the reorganization of French industry on corporate lines, the abolition of all democratic republican institutions, and a state in which an absolute hereditary monarch would be advised by an élite of councillors responsible only to him. It appealed almost exclusively to the young of the middle classes. Its methods of action were violent press campaigns, frequent street rioting, and the grouping of its followers into a semi-military organization, called the *Ligue d'Action Française*; of which the *camelots du roi* were the shock troops.

Another party with pronounced fascist leanings was the movement called *croix de feu* (i.e. fiery crosses, so named after a medal awarded for service in front-line trenches during the First World War). Originally a league of ex-servicemen, a French equivalent of the British Legion, it developed into a political organization under the leadership of Colonel

de la Rocque. Its spectacular demonstrations gained a good deal of publicity until it was dissolved by the popular front government in 1936; it was revived under the name *Parti Social Français*, with a programme derived largely from de la Rocque's own "mystique"—a compound of patriotic fervour, military virtues, and religious faith. By 1939 it was much discredited as a party of words rather than of action; its followers, recruited among ex-servicemen and the lower middle classes, expressed the vague dissatisfaction with political instability which was characteristic of France between the wars.

Other more or less right-wing movements were the *Francistes*, or bluishirts; the *Solidarité Française*; the *Parti Populaire Français*, led by the ex-communist Jacques Doriot; the *Jeunesses Patriotiques*, etc. All these groups lacked a coherent programme, and offered little more than vague panaceas and calls to action at some future date. Their emotional appeal was directed at once to the intellectual élite among the younger generation, and to the small tradesmen and rentier class, oppressed by the danger of encroachment by big business or the nationalised industries. A feature common to all was their belief in and practice of violence as a means to an end. There was no agreement as to the kind of system to be adopted once the "national revolution" (as the projected overthrow of the republic by the extreme right was called) had been accomplished, but all these parties favoured Mussolini's brand of fascism rather than German nazism.

The Vichy Régime

The capitulation of France in June 1940 afforded the extreme right its opportunity. The old Marshal Pétain took over the premiership, and used the plenary powers granted him by parliament to abolish the republic and set up the "French State" (*Etat Français*), with himself as head of the state. What followed had all the makings of the familiar type of a fascist dictatorship. The Vichy régime, as it came to be called, at once divested of democratic institutions that part of France not at first occupied by the Germans.

Parliament and all left-wing and centre parties were dissolved; trade unions were banned; corporate bodies formed to fill the gap. The most important (though least effective) of these was the National Council, which consisted of representatives of industry, agriculture, trade, and the liberal professions, and served as a kind of advisory council. The Church was given extensive privileges as well as a wide measure of control in the matter of education. During the four years of its existence, the Vichy régime made attempts to consolidate a system that was in fact a mixture of industrial

feudalism and political reaction. A so-called charter of labour laid down the rights of the workers, which, like so much else that was passed as legislation, remained on paper.

The whole record of the Vichy régime was one of unparalleled incompetence at home, and of surrender to the Nazis in Europe and the Japanese in Indo-China. Its ideological basis was little more than the marshal's personal "mystique," which combined a romantic harking back to the past glories of France with a negative opportunism; it was kept in office by permission of the German army of occupation, while it supplied the Nazi war machine with conscript labour and materials. It divided France into two bitterly hostile camps, the "Vichyites" and the "Resistance," whose differences were still grimly in evidence more than a decade after the war.

Dictatorship in Spain

In Spain a régime similar to that of Mussolini came into being in 1923, when General Primo de Rivera seized power and made himself dictator. His coup was the consequence of the inability of those who operated parliamentary government to cope with potential and economic upheavals. Primo's rule was notable for the construction of much-needed roads and railways. In every other respect it was a failure. In 1930 Primo resigned; soon afterwards he died, an exile in Paris, a few months before the proclamation of the Spanish Republic.

It would be erroneous to assume that corporatism is a typically fascist product. The revival of the guild system, and its adaptation to modern needs in some form or other, has long been advocated in various quarters. The concept enjoys wide support among Roman Catholics in Continental Europe, and forms the substance of the Christian-Democratic idea of social reform, implying the following action: radical reconstruction without revolution of the economic system; control of industry through unions in which capital and labour are represented; minimum wage legislation; preservation of private property in so far as it is compatible with moral law and social welfare. The policy of corporatism was adopted by some socialist groups early in the 20th century, as the basis for a social system involving state planning and the co-operative movement.

Corporatism in Britain

Corporatism had its supporters in Britain, where it made its appearance, just before the First World War, in the modified form called guild socialism. It was an attempt to dovetail socialism with "syndicalism," or control by trade-unions; exponents of the idea proposed complete control of each industry by the workers of that industry organized in guilds. A guild

congress, consisting of representatives of the national guilds, would settle differences between them, and exercise control over all matters relating to trade and industry. A second congress, elected from geographical districts, was to represent the people as consumers, concerning itself with education, foreign policy, etc.

The Co-operative Movement

An organization with a socialistic attitude to the state and individual freedom is the co-operative movement. Now politically affiliated to the labour party, it began in Rochdale (Lancashire) in 1843, when 23 weavers, anxious to reduce their expenses in hard times, raised 20 shillings each and started a co-operative grocery. Each shareholder had one vote, goods were sold at current market prices, and after operating costs had been paid the surplus was divided quarterly among the members, in proportion not to the amount of stock held but to the amount of goods purchased.

The store prospered and the experiment caught on. In time, the co-operators opened a wholesale business of their own with stock held by their retail stores, and savings were distributed among them according to purchases. Co-operative enterprises have expanded tremendously; the movement now owns and operates factories manufacturing every type of commodity, farms, mines, shipping lines, etc. It conducts banking, insurance, and travel businesses, a national Sunday newspaper, and extensive housing schemes. It has branches everywhere in Britain, and is also very strong in the Low Countries, Scandinavia, Switzerland, and Germany.

Co-operators do not believe in the class struggle. They hold that a man's function as a consumer is more important than his function as a producer. They look forward to the disappearance of the capitalist system, for which they would substitute the co-operative commonwealth. This they propose to bring about, not by political action, but by the gradual extension of voluntary co-operative enterprise, until all industries are owned and operated by co-operators. These self-governing co-operative associations would provide their members not only with the services now provided by capitalist institutions but also with many of those now provided by the state, thus greatly reducing the internal power of the state.

National Socialism in Germany

In Germany, in 1923, one year after Mussolini's march on Rome, Adolf Hitler attempted a similar coup in Munich (November 9, 1923). He failed, and was sentenced to five years in Landsberg fortress (he actually spent only eight months in gaol). Such was the political and economic chaos of the following years that by

January 1933 the national socialist German workers party, of which he was the leader, had won supreme power in Germany. On January 30, Hitler became chancellor, the German equivalent of a British prime minister. "Nazism" (*Nationalsozialismus*) may be regarded as the German version of fascism.

National socialism or nazism derived its inspiration from Friedrich Nietzsche, Houston Stewart Chamberlain, Richard Wagner, and a host of nationalist, romantic, and racialist writers of the preceding 50 years. Its adherents drew up a programme containing 25 points, the principal being the union of all Germans within a Greater German Reich; the abolition of the Versailles treaty; the removal of Jews from all positions of influence and their expulsion from the national community; nationalisation of industrial combines and the abolition of monopolies; and a new deal for agriculture through the promotion of a return to the land. Racial theory underlay the party's ideology; its promoters sought to assert the superiority of the Nordic race over all others. Nazis also claimed other Nordic peoples as "blood relations"; Scandinavians, Dutch, Flemings, and Celts were dubiously honoured by this claim of kinship. Germany was to be a hierarchical society governed by a new aristocracy. The Nazi philosophy rejected Christianity and humanism, substituting for them a cult of violence and cruelty.

The Hitler Régime

The Hitler régime had many features in common with Italian fascism. After the death of president Hindenburg in 1934, Hitler became the *Reichsführer*, combining the offices of president and chancellor. His word was the supreme law. Mussolini's private army of blackshirts was paralleled by Hitler's brownshirts, the S.A. (*Sturm-Abteilungen*) or storm-troopers, and blackshirts, the S.S. (*Schutz-Staffel*) or defence corps; and an all-powerful police apparatus, the Gestapo (*Geheime-Staatsspolizei*) or secret state police, which had spies and informers everywhere. The Nazi system was kept in being by terror, concentration camps, and the regimentation of the whole German people, which was begun at an early age with enrolment of boys and girls in the Hitler youth movement. For the workers there was the labour front; for the unemployed the labour service; for the deserving workers and party officials the "strength through joy" movement.

As in Russia and in Italy, there was only one party; only members of that party might sit in the Reichstag; everything and everybody was subordinated to the needs of the state as interpreted by the Nazi chiefs. Force is the traditional German gospel; under Hitler

only the Fuehrer had the right to command, and the German people had the duty to obey him. The Second World War was the chief contribution of nazism to history, a devastated Europe its military achievement. This evil doctrine brought about appalling tyranny and the massacre of millions of human beings ; its protagonists found their reward in the collapse of German power on May 8, 1945. Nazism may be an almost entirely spent political force, but it has left the world with innumerable problems, some of which seem well-nigh insoluble.

The Falange

More akin to the original fascisti are the political organizations of the two Iberian countries. In Spain, there is the *falange*, of which General Franco became *caudillo* (leader) in 1936, when there seemed to be a likelihood that the falange would adopt a programme in line with the more radical aspect of fascism. Like its prototypes, the movement grew and developed as a reaction against political drift and ineptitude. A savage civil war broke out ; the Germans and Italians sent help to Franco and used the fighting to experiment in new techniques of warfare. During the Second World War the Spanish fascists were violently pro-German and pro-Italian and advocated intervention by Spain. Franco was sufficiently wise to avoid hostilities. Since the war the falange has had a period of partial eclipse, though the fascist type of administration has been retained throughout. The falange has lost considerable ground to the traditional ruling forces of army, Church, and landowners, but

the falangists are still the only party in the state. The movement has its own militia of blueshirts, women's organizations, and labour unions organized on corporate lines. Franco holds all power in the state. He is assisted by a kind of nominated parliament, the *cortes de Espana*, whose members sit by virtue of high offices of state, or as Franco's nominees.

A less oppressive if equally reactionary constitution is that of Portugal, associated with the name of Dr. Salazar, who in 1932 became prime minister and dictator of the country. There is a parliament of two houses, the national assembly (members are elected by popular vote, but only government candidates are allowed to stand), and the corporative chamber, which consists of members representing local professional associations and business groups. There is a president, chosen by a fairly comprehensive electorate, in which educated women have a place.

The Salazar Régime

The Salazar régime, while anti-democratic and embodying the principle of authoritarianism, has been in practice comparatively mild. During and after the Second World War, Portugal as a neutral country prospered enormously, but the standard of living of the masses is still very low indeed, and illiteracy remains correspondingly high. The Salazar régime might be described as a kind of Christian-socialism, and Portugal as the country where the corporate idea has worked without the atrocities of revolution and reaction that have been provoked elsewhere.

LESSON 15

The League of Nations, and the United Nations Organization

FROM the totemic group to the tribe, from the tribe to the clan, from the clan to the city, from the city to the nation, from the nation to the empire, from the empire to the free association of kindred nations, a consistent process of increase can be seen in the scope of political units. At the same time, from the Middle Ages onwards, the idea of an even larger unit has haunted imaginative minds.

This idea has drawn strength from the memory of Rome. Thoughtful men looked back on the Roman peace, on the "world empire" (though of course the known world was then small) established by a single nation with a genius for government, and wanted a restoration of that empire, or the setting up of some form of world government on the same scale. Dante dreamed of this development ;

the great French statesman Sully, minister of Henri IV, drew up a scheme for it ; for a time the Church provided educated Europeans with a common religion and a common language (Latin). When the nation states were formed, that unity gave way ; for centuries, only idealists pondered the idea of a world state. Tennyson's predicted "parliament of man, the federation of the world" was not considered, even by the poet himself, to be within the range of practical politics, for in order to discern it he "dip't into the future, far as human eye could see."

The shock of the First World War stirred the notion afresh in many minds, including those of General Smuts, Lord Phillimore, Lord Robert Cecil, and President Wilson of the U.S.A. Wilson was able to force a League of

Nations upon the peace conference in Paris in 1919 ; beating down formidable opposition, he compelled the incorporation of the League Covenant in the Treaty of Versailles. Although his own people repudiated it and refused to join the League, nothing could undo his work. So there came into being this entirely new "instrument for the maintenance of a new order in the world of civilized men," as Wilson called it. The British government official paper described it as a "solemn agreement between sovereign (and independent) states which consented to limit their complete freedom of action on certain points for the greater good of themselves and the world at large."

This move towards the larger unit that should federate nations was not directly a move towards a world state ; such a state, or even a "parliament of man" that should override and eliminate national sovereignties, was not in Wilson's mind. It was a move towards an institution intended to become, to quote Smuts, "part and parcel of the common, international life of states ; an ever-visible, living, working organ of the polity of civilization, functioning so strongly in the ordinary peaceful intercourse of states as to become irresistible in their disputes ; its peace activity being the foundation and guarantee of its war power."

The Task of the League

In the words of the Covenant itself, the task of the League was "to promote international co-operation and to achieve international peace by the acceptance of obligations not to resort to war ; by the prescription of open, just, and honourable relations between nations ; by the firm establishment of the understandings of international law as to the actual rule of conduct among governments , and by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organized peoples with one another."

The machinery of the League consisted of : (1) an assembly, in which each member had one vote and not more than three representatives (nominated by governments), meeting at stated intervals and dealing with any matter "within the League's sphere of action or affecting the peace of the world" ; (2) a council composed of one representative from each of a certain number of nations, some unchanging, others elected by the assembly for a period ; (3) a secretariat, for which the money was found by member-nations ; (4) the international labour office at Geneva ; and (5) the permanent court of international justice at The Hague.

Geneva was chosen to be the home of the League, which was at once charged with the carrying out of various arrangements made by the Versailles treaty. Chief among these was

the allotment of mandates to certain countries to control or administer territories which had been taken from their possessors in the war, and which, it was agreed, should not be annexed by any single power. Here was an entirely new method of governing peoples who either did not wish or were not to be allowed to govern themselves. It was, in effect, government by international agreement.

League Intervention

Disputes between nations soon began to call for League intervention. Its first efforts were not very successful. It could not dislodge the Poles who had seized the city of Vilna from the Lithuanians ; nor was its decision as to the frontier between Poland and Germany and Upper Silesia well received. Bands of Polish irregulars repeated the Vilna exploit and took possession of districts which were in dispute ; the compromise arranged was considered to be weak. So, indeed, were regarded many other League actions or failures to act, especially those connected with the Japanese invasion of Manchuria in 1931.

The League had no sovereignty. Its council, which usually had to take action or refrain from it, was composed of politicians from various countries, and the result of bringing them together was to make them not more but less vigorous than they were at home. The assembly was more inclined to be energetic, and more insistent on principle ; but it consisted of government-nominated persons who without instructions were powerless. Its strength lay in the fact that the representatives of smaller countries often did get instructions to disregard the solemn warnings of the Great Powers against doing anything, and could therefore urge boldness. But it was obvious that they stood to suffer less from being bold than larger countries, and in the end counsels of caution always prevailed.

A number of possible wars between smaller nations were prevented ; many causes of friction were smoothed away ; the international court of justice acted promptly, and on the whole fairly, whenever it had disputes placed before it ; very great advantages resulted from the meetings of foreign ministers at Geneva. There was widespread disappointment at the League's failure to secure any appreciable measure of all-round disarmament, but it has to be remembered that the sum of the desire for progress in disarmament commissions could not be greater than the sum of the desire felt by the members of those commissions taken separately as representing governments which showed no great desire for such progress.

From the very beginning many of the most ardent supporters of the League idea contended that the League could never do what was

expected of it until it had an instrument of force at its disposal—a kind of international police. The League never had such a force at its disposal. Those who joined it continued to rely upon public opinion to deter the war-makers. In the Covenant, detailed provision was made for the prevention of war. League members agreed that any quarrel likely to lead to violence should be submitted either to arbitration or to inquiry by the council, and that in no case would they start fighting until three months after the council had reported the result of its inquiry or the arbitrators had given their award.

Why the League Failed

It is easy to give a number of reasons why the League failed as it did, and why it eventually collapsed. Lack of any means wherewith to enforce its decisions is probably the most important reason. Moreover, it was in the beginning an association of only the victors in the First World War, who were resolved upon the maintenance of the *status quo* established at Versailles in 1919-20. Germany joined the League in 1926 following the Locarno Pact, but withdrew in 1933 when Hitler secured power. Another drawback was the fact that League decisions had to be unanimous and unanimity was almost impossible of attainment. And the abstention of the U.S.A. from all participation in the League was a severe blow from which it never recovered.

The supreme test in the history of the League was Japan's invasion of Manchuria in 1931. China appealed to the League in accordance with the covenant; but beyond ordering the Japanese to withdraw, sending a commission to investigate the situation on the spot, and in 1933 condemning Japan for her aggression, the League did nothing.

In the same year Japan announced her withdrawal from the League; a few months later Germany followed suit. Italy withdrew in 1937, following several years' attempts by the League to prevent the seizure of Abyssinia by Mussolini's armies. Abyssinia appealed: the League imposed economic sanctions on Italy, but failed to take up the military challenge.

Expulsion of the Soviet Union

In 1938 Hitler's annexations of Austria and Czechoslovakia were passed over; but when the Russians invaded Finland, and the Finns appealed to the League at the end of 1939, a special assembly was convoked which expelled the Soviet Union from the League. This left the British Commonwealth and France as the only Great Powers still in the League, though they were accompanied by some 40 of the smaller states. In May 1940 it was reported that four-fifths of the League secretariat had been suspended or compelled to resign.

presumably because of insufficient funds to pay them. With the passing of what had been in effect an international civil service it was no longer possible to hold a meeting of the assembly or the council.

The international labour organization survived the collapse of the political branch. The organization consists of the international labour conference, and of the international labour office (I.L.O.), a permanent body of civil servants controlled by a governing body representative of the governments, employers, and workers of the affiliated countries. Since 1919 the I.L.O. has held a number of sessions, principally at Geneva, and its draft conventions have been accepted by many countries. These conventions have been aimed at the raising of world standards of health and conditions of life and labour. Attention was also paid to the suppression of the international trade in harmful drugs, and the white slave traffic.

Charter of the United Nations

The I.L.O. was eventually taken over by the United Nations, the second attempt to establish a practicable world council. At Dumbarton Oaks, U.S.A., a four-power conference (China, the U.K., the U.S.A., and the U.S.S.R.) was opened in August 1944, to devise the machinery for a post-war international security organization. General agreement was reached on both structure and aims of an international league to maintain peace and security. Ratification of these proposals by the necessary minimum number of the Powers was effected in October 1945. No fewer than 50 nations subscribed to the charter of the United Nations drawn up at San Francisco during that summer.

The charter brought into existence the six main bodies of the organization: the General Assembly, the Security Council, the Economic and Social Council, the Trusteeship Council, the International Court of Justice, and the Secretariat. In the general assembly, which meets at least once a year (special sessions may be called), representatives of all member-nations meet on equal terms. It may discuss, and make recommendations upon, any international question that is not already being dealt with by the security council.

The security council sits continuously, and is responsible for maintaining peace and security. It consists of 11 members, of which representatives of China, France, the U.K., the U.S.A., and the U.S.S.R. are permanent; the remaining six are elected by the general assembly, to sit for two years. All decisions requiring action must be approved by all five permanent members. This means that any one of those five can, by right of veto, prevent the council from taking action, even if the other ten members desire such action.

How far this organization will ultimately prove more successful than the League of Nations in securing world peace and promoting world progress remains to be seen. Certain weaknesses in the charter have become apparent. The U.S.S.R. and her political associates have long used the general assembly and the security council as platforms for political propaganda. This would matter little—the existence of opposing parties and rival policies might be in itself a healthy sign—if the communist countries did not also thwart the work of the security council by an unforeseen use of the veto. In the first six years of the existence of the United Nations, the U.S.S.R. used its right of veto 54 times. The retention not only in the assembly but also as a permanency on the security council of representatives of Nationalist China did nothing to lessen the intransigence of the U.S.S.R. and other communist states.

Nevertheless, the United Nations Organization (U.N.O.) has to its credit several achievements superior to anything effected by the old League. It has played a considerable part in settling or circumscribing local disputes; U.N. intervention finally ended the four-year-old war between the Netherlands and Indonesia (1949). U.N. mediation kept India and Pakistan from war over the question of Kashmir. Time and again the teams of United Nations observers, and action by the assembly or the security council, or both, restrained Israel and the Arab states from renewing hostilities. U.N.O. was responsible for creation of two new post-war states: the kingdom of Libya (1947) and the state of Israel (1948). U.N.O. has promoted help, especially technical help, to underdeveloped or backward countries through the medium of its specialised agencies such as the World Health Organization (W.H.O.); the Food and Agricultural Organization (F.A.O.); the Economic Commission for the Far East; and the United Nations Educational, Scientific and Cultural Organization (U.N.E.S.C.O.).

The prestige of the United Nations was greatly enhanced by the manner in which it

dealt with full-scale military aggression. The attack of North Korea on South Korea in the summer of 1950 was a challenge to U.N. authority which—thanks to temporary and self-imposed absence of the Soviet delegate from the security council—was speedily accepted. U.N. forces (mainly from the U.S.A. but representing other member-nations and fighting as the United Nations) made war on North Korea.

Meeting Armed Communist Expansion

It was not a particularly successful war. Striking initial successes brought all but a small region of South Korea under control of the communist North Korean forces, which were then heavily defeated and forced to withdraw beyond their starting-point. Powerful Chinese "volunteer" armies then intervened, supporting and replacing the North Koreans. Protracted armistice talks in the village of Panmunjon eventually produced the end of hostilities. Although this Korean war left the country divided, it showed that aggression does not pay, and that the Western democracies were united in a resolve to meet armed communist expansion with armed resistance.

A United Nations force was despatched to Egypt in 1956, not to fight but to maintain peace following Israel's attack on Egypt and the intervention of the U.K. and France. All the parties involved agreed to a cease-fire on the terms proposed by the U.N.—though the fundamental problems which had caused the dispute remained unsettled.

The trusteeship council watches over the political interests of those territories formerly administered under the League of Nations mandate; in fact, a U.N. trusteeship is the old League mandate under another name. The international court of justice continues to deliver its judgments on questions of international law submitted to it by members of the U.N.O. Thus the machinery for successful world politics exists and is kept in fair working order against the time when the world shall choose to make full use of it.

LESSON 16

Suggested Improvements in Democratic Machinery

No student of politics should neglect to examine the constitution of Switzerland. Valuable lessons can be learnt from a study of the methods of the Swiss Confederation, by which name the country is called in its own four languages—German, French, Italian, and Romansch.

In Switzerland the tribal meeting, a feature of all early Teutonic systems of rule, was never abandoned. In some of the smaller cantons it survives; to-day in Glarus and Appenzell assemblies of ten thousand (and elsewhere of smaller numbers) may still be seen. All in black suits according to ancient custom, these

assemblies decide with business-like dispatch and a minimum of formality what measures are necessary for the well-being of their district. Such mass meetings are held once a year, usually in the open air ; whatever they agree upon is, according to the constitution, "law of the land and as such must be obeyed."

The voters (only men are allowed to vote) take the proceedings very seriously ; they are mostly simple folk, living on the land, and their problems are few. All matters brought before the meeting (*Landesgemeinde*) have been already discussed by the cantonal legislature ; any law disliked by a proportion of electors varying from one-fifth to one-twelfth must be submitted to a referendum. This is a regular form of Swiss political procedure, in federal as well as local affairs. Any act of the national legislature that does not concern national finance or international relations can be put to the general vote. The practice dates back more than a century, and is considered to have worked well. There is also in force the "initiative," which allows a vote to be taken at the request of 50,000 or more citizens who want new legislation. If the vote favours change, the authorities must draft a measure on the lines proposed, but this does not mean that it will necessarily become law.

Switzerland's Federal Assembly

Political power in Switzerland remains more in the hands of the public than elsewhere. So far as it is not used directly, or exercised by local assemblies, it is entrusted to a federal assembly, consisting of a national council (members elected for four years) and a council of states, to which each of the 22 cantons sends two representatives (chosen in some places by popular vote, in others by the local legislatures). The federal assembly elects seven ministers to compose the *Bundesrat* or federal council ; they hold office for four years. One of them is chosen to be president of the confederation and another vice-president of the council, but they hold these positions for only one year at a time, and cannot serve two years running.

The Swiss president is merely a temporary chairman of the cabinet, and all the ministers are, like him, personally responsible to the legislature, each one holding a separate commission. Cabinet unity must, however, be maintained, for decisions can be taken only by the ministerial council as a body. Ministers do not hold office at the prime minister's pleasure, nor are they expected to resign, either as a whole or individually, if the assembly rejects measures submitted by them ; they remain in office and prepare other measures that seem likely to be more acceptable. At the end of their four years they are often re-elected. Ministers' tenure of office depends on the

ability they show and their readiness to do what the country wants. The nation's affairs are dealt with as if they were the affairs of a business company or cultural association ; they are not made the sport of party politics.

Changes in Constitution

A referendum is necessary in many countries before any important change can be made in the constitution. Some apply it to changes of other kinds. The constitution of the U.S.A. cannot be altered in any respect without the consent of congress and of majorities in three-fourths of the states. Nearly all states in the Union require amendments in their local constitutions to be submitted to a popular vote. In Australia the people as a whole must decide whether the federal constitution shall be changed ; they have been asked to vote on special issues of other kinds, such as compulsory military service. In New Zealand the prohibition of alcoholic drinks was submitted to a referendum. Canada uses the referendum in local but not in central government. In the Irish republic a referendum is required before any amendment of the constitution may be effected. The adoption of the Irish constitution in 1937 was the first instance of such a referendum in the British Isles.

The initiative has been adopted in a number of American states, most of them in the west, but this plan of allowing majorities to instruct legislatures to pass certain measures is not considered to have worked well. Often the proportion of electors who vote is small, and though more proposals are rejected than approved, those favoured are in many cases hasty and ill-prepared. Nevertheless, as a consequence of the growing prejudice against politicians, initiative and referendum are more energetically urged as instruments of good government and gain many converts. In recent years hundreds of proposals have been initiated in states of the U.S.A. by bodies of voters, and referendums conducted as to their adoption or otherwise.

Government by Commissions

In the U.S.A. the decision of many cities to entrust their government to commissions composed of a few men chosen for a period of years made it necessary to set up some machinery for getting rid of them if their performance is unsatisfactory. Los Angeles introduced in 1903 the device called the "recall," whereby a stated percentage of the electorate could demand a vote as to whether the commissioners should be removed from office before the expiration of their term. Other cities adopted the device, and in 1908 the state of Oregon applied the method to state officials, elected for long periods. A number of other states did the

same, some excluding judges from the operation of the system, others making it cover all in state service. In North Dakota, in 1921, not only were a commissioner for agriculture and the state attorney dismissed but the governor was removed. As a means of turning out public servants who do not give satisfaction, the recall is (it is argued) more rapid than impeachment, and probably less likely to be abused.

Proportional Representation

The change in political machinery most frequently adopted of recent years is proportional representation. For nearly a century the inequity of voting in single-member constituencies—electing all who receive majorities, no matter how small, and leaving minorities, however large, without any representation—has been discussed and deplored.

Various modes of securing more equitable election results have been tried in most countries with parliamentary government. Under the Weimar constitution in Germany the form of proportional representation called the single transferable vote was used, with the difference that the elector voted not for a man but for a party (in 1930 there were 25 of them). If he put his cross against one of them he accepted its list of candidates entire. This gave a great deal of power to party managers; it had also the effect of keeping old members in the lists and not allowing younger men to get on to them. The result of this system was that the mass of electors voted for one or other of the prominent parties without any serious study of the election literature of the minority groups.

The Irish republic also uses the single transferable vote system. This system requires the grouping of existing constituencies, or the creation of large constituencies if an entirely fresh start is being made. There are likely to be four or five members for these, and there may be ten or a dozen or twenty candidates. What the elector is required to do is to place the figure 1 against the name of the candidate who is his first choice. He can leave it at that, or he can go on to put 2 against his next choice,

and so on all through the list. When the votes come to be counted, the number of voters is divided by the number of seats plus one. The resulting figure is increased by one and is called the quota; any candidate who receives the quota figure is declared elected.

For example, if there are six seats and 63,000 electors, candidates who have received 9,001 votes or more are straightaway successful. But the votes they receive over and above the 9,001 required for success are not wasted. They are transferred to the second choices of the persons who recorded them, and this process is repeated with the further choices, until all surplus votes have been transferred downwards. Then the candidates lowest in the list are one by one struck off and their votes transferred upwards, again according to next preferences, until there remain only enough candidates to fill the vacancies. So in the end the wishes of the electors are reflected by the result.

Compromise and Party Pacts

It has been objected by opponents of proportional representation that voters would find it too difficult to understand. But in the Irish republic the number of spoiled voting papers is small. Another objection is that a number of groups would be returned to parliaments instead of two large parties; that might or might not be a disadvantage. If it made parties less powerful and reduced the influence of the party machines, it might be welcomed, because it is distrust of, and even disgust with, the excesses and aberrations of party governments that have given this new method such wide acceptance.

A much stronger objection is that proportional representation tends to weaken the government, because it often operates against the emergence of a clear parliamentary majority. Thus it makes for compromise and party pacts which have often proved harmful to the healthy development of democratic institutions. Those who hold that the first duty of a government is to govern tend to suspect electoral methods which, while obviously fair, make for weakness in the central power of the state.

LESSON 17

Evolution of the Welfare State

IN Great Britain the "welfare state" resulted from a gradual and peaceful revolution, achieved within the terms of the British constitution and by means of parliamentary democracy. The process was hastened by the coming to power of the Labour administration of 1945-51, on a programme of nationalisation (i.e. state ownership and administration) of certain basic industries and assets.

The principle of state insurance against ill-health and unemployment was introduced in the United Kingdom by the Liberal government before the First World War. So, also, was the principle of pensions for aged people. A vast scheme of compulsory state insurance, drafted in 1944 by a committee presided over by Lord Beveridge, provided for state insurance for all, with greatly extended benefits from the cradle

to the grave, and was accepted by all three political parties. It fell to the Labour party to put it into practice. During the war years, a coalition government (predominantly Conservative) had found that in the successful waging of "total war" the state must control, restrict, and indeed shape the pattern of industry and commerce; the needs and demands of the individual must be subordinated to the achievement of "the greatest good of the greatest number," namely, victory over the enemy.

In 1945 the Labour party took office after six years in which the British people had become conditioned to think that the individual was less important than the state, and that the state should become even more responsible than before for the welfare of the individual. The welfare state came rapidly into being as a workable balance between the responsibility of the state and its individual members. It is now established that the individual can claim certain benefits from the state, which makes itself responsible for his education, and insures him against unemployment and ill-health, and against destitution in old age.

British Tradition of Peaceful Change

It is usual to consider Britain as the typical home of evolutionary development. As a nation, the British have never been logicians; they ask of any arrangement, system, or device, not whether it is reasonable but whether it works or will work. Britain has been more successful in domesticating the class struggle than, for instance, the United States of America. The British tradition of responsible conservatism has prevented the ruling classes from seeing national disaster in every trifling social reform, and British labour can claim to possess a profound sense of national responsibility. The transition from the pre-war social order to the welfare state, though not without its critics, actually became an instrument of social progress instead of national disruption.

The generation of 1945 had developed a marked taste for the planned welfare state, and thought in terms of a Labour administration for something like 20 years. A widespread belief that return to power of the Conservative party would involve a return of the lean years before the war—a period of which the older generation had bitter memories, including those of the "dole queue" and the "means test"—gave the Labour party their victory in the summer of 1945, with a substantial majority.

Since that occasion there has been much controversy as to whether this victory was indeed one for socialism. Some were inclined to think it was more a vote against the past. Others felt it to be a "sign of the times"; Labour's victory in Britain was followed by similar successes of the socialist parties in the

Scandinavian countries, Belgium, and the Netherlands. It was also argued that the socialist landslide was due chiefly to the services vote. Whatever else it was, the real significance of the general election of 1945 lay in the fact that it testified to and strengthened the powerful British tradition of peaceful change. It thereby made possible and inaugurated a series of reforms reflecting the new attitude to vital problems.

Collision with Private Enterprise

Implementation of these reforms sharpened the conflict between principle and procedure. Those who disliked the concept of a socialist planned economy were quick to point out the growth of state interference in the life of the private citizen. There was considerable criticism of what came to be known as the rule of the "man from the ministry." The argument, whether right or wrong, had some force. The new responsibilities of the welfare state collided with what its detractors called "private enterprise," and its supporters "vested interests." The adoption of a comprehensive programme of social and economic reforms entailed the taking over by the state of many essential industries. The term "industries" in this context might, perhaps, be widened to denote the state ownership of certain public bodies and companies. A case in point was the Bank of England; another, the air transport companies. In 1946 the Bank of England was nationalised. And from state ownership of the air transport companies have emerged the British Overseas Airways Corporation (BOAC) and British European Airways (BEA).

Operation and Administration

One of the first key industries to be transferred was coal mining; a National Coal Board (NCB) was set up to undertake the operation and administration. Here, again, the principle of the "greatest good of the greatest number" was adhered to; the coal board was established as an authority catering for the community as a whole. The NCB is sub-divided into a network of eight divisions and seven areas, each with its own administrative and consultative machinery. The same principle was adopted for another key industry, that of fuel and power; here the governing bodies are the Central Electricity Authority (CEA), which operates through 12 area boards covering England and Wales, the North of Scotland Hydro-Electricity Board, and the South of Scotland Electricity Board.

The state's widening range of civic responsibility—or, as some call it, interference with what used to be left to individual planners and builders—is illustrated by various Town and Country Planning Acts that have become law since the late nineteen-forties. The many resulting institutions include the Development

Corporations, which formulate ideas and work out blueprints for modern town and country planning. Another direct result of these acts has been the building of the so-called satellite towns to relieve housing shortage and overcrowding in large cities, especially the London area. The powers of the local authorities were extended to give them priority over private builders where construction of houses or works of public utility was concerned. Here again the state takes precedence over the individual, whether on the national or the local plane; the state has ordered, amended, or approved the design of what it felt to be best for the community.

The most striking extension of state responsibility for the individual occurred in 1948, with the coming into force of the National Health Service and of a new National Insurance Act. This latter provided for compulsory insurance of every man, woman, and child in the United Kingdom, whether gainfully employed or not. It co-ordinated all earlier national insurance schemes, and greatly extended the range of sickness and unemployment benefits, retirement, disablement, widows, and orphans' pensions, etc.

The National Health Service, which provided free medical treatment, drugs, and appliances for all (though later some charges were introduced), was unprecedented in this or any other country. It aroused bitter opposition in some quarters. It was claimed that it would turn medical practitioners into something akin to civil servants, and so destroy the bond of mutual confidence between the family doctor and his patients; also that would adversely affect efficiency in the medical profession and attract an unworthy type of would-be practitioner. The general growth of bureaucratic control was another objection raised.

Period of Trial and Error

There is no simple answer to the question as to whether state ownership has been a success. It can be said without bias or partisanship that in the initial stages the operation of the state-controlled industries fell far short of expectations. The lack of experience, of managerial

skills, of certain categories of materials, all combined to cause disappointment and occasional shortages. There was even some question as to whether state planning was in fact an improvement on the existing order of things. The passage of time provided the answer to some of these misgivings.

The majority of the nationalised industries have emerged not unsuccessfully from their period of trial and error. In the main the principle of state participation in many fields of activity, and of the state's taking precedence over the individual, has come to be generally accepted by the majority of the British people. With the traditional genius for compromise, ways and means have been found so far, and more no doubt will be devised as time goes on, to dovetail the powers of the welfare state with the freedoms of the individual in a manner at once beneficial and acceptable to both sides.

A Permanent Feature

The acceptance of state control through the welfare state is in itself an event of considerable significance. The need for assistance by the state in the operation of certain key industries and essential services is now a permanent feature of both the national economy and political administration. The general election of 1951, which returned the Conservatives to office, was followed by no attempt to reverse the pattern set by the previous Labour administration. There was no reduction in state responsibility for the welfare of the individual citizen.

Social benefits introduced by Labour were left unaltered, and in some cases, such as family allowances and pensions, even increased. With the important exceptions of the iron and steel industry, and road haulage, the Conservatives did not hand back nationalised industries to their erstwhile owners. It was natural that a party wedded to the twin principles of private enterprise and private ownership would do away with a number of restrictions and controls which, thanks to an improvement in the general standard of world economy, were rapidly becoming or had already become obsolete.

LESSON 18

What May We Learn from Politics?

THESE Lessons have traced from its earliest beginnings the growth of government, examining the many forms it has taken and the frequent changes it has undergone. It will be useful to summarise very briefly what we have discovered.

The earliest form of government was theocratic—the rule by men claiming to be in the confidence of a god or gods whom all feared and whose wishes were conveyed by these men to

the people. Next came patriarchal government, the tribal system, whereby the oldest men ruled; out of that grew kingship, the choice of a man younger and more capable to lead the tribe in war and to act, with the assistance of a small body of other leading men, as law-giver during periods of peace.

Kingship, become hereditary, aroused opposition some 2,500 years ago, and a number of Greek cities began to be governed by public

meetings (democracy). The population assembled in the market-place and became its own legislator, appointing either by choice or lot, certain of its members to carry out its decrees and administer affairs. Other cities were ruled by the most wealthy and influential citizens ; these were called aristocracies. Elsewhere, at first in the East chiefly, sovereignty was seized and sustained by force of arms and character of an individual ; this was autocracy.

The only characteristics common to these methods of government—as, indeed, to all others too—were : (1) that rulers thought mostly of their own advantage and that of their friends, (2) that none of them lasted very long in terms of centuries. Some nations (the Chinese, for example) remained for a number of centuries under much the same system, but not under the same ruling families or castes. In western Europe changes followed one another rapidly. At times autocratic, aristocratic, democratic, and theocratic systems existed side by side (in Russia, England, Switzerland, and the Papal states). Representative government as a form of democracy, suited to populations grown too large for the Greek public meeting plan, came greatly into favour during the 19th century. Now it is losing the confidence that was placed in it. The notion is widespread through the world once more that self-appointed rulers basing their power on a small but well organized and religiously obedient part of the population can govern better than the chiefs of political parties.

The Nature of the State

A change in opinion regarding the nature of the state has also been making headway. After the overthrow in England, France, and other countries of Europe of what we now call paternal monarchy there was a strong view that government should do as little as possible, instead of interfering in everything, as kingly government had done. A distinguished German, W. von Humboldt, urged (in opposition to Hegel, whose philosophy exalted the state and made the individual merely a means to a collective end) that the state should do no more than ensure security of person and property. Manufacturers who were making fortunes out of mechanised industry had better reason than he to prefer the system of *laissez-faire*, or leaving everybody alone, to a state vigilant in looking after everybody's interest. Yet it was hardships caused by the use which those manufacturers made of their liberty to carry on their industries as they pleased that led to the demand for state control in an ever-increasing degree.

In no country was the system of *laissez-faire* carried so far as in England ; therefore it was in England that the revulsion of feeling against it became most emphatic.

As early as 1869 Matthew Arnold, in *Culture*

and *Anarchy*, pleaded for a state which should be " a public recognition and establishment of our best self, or right reason." He thought the assertion of personal liberty as the central idea of English life and politics had been carried too far and was threatening to produce a state of anarchy. Only culture, he believed, could defeat that danger ; as the instrument of culture he suggested a state which should be " the nation in its collective and corporate character, entrusted with stringent powers for the general advantage and controlling individual wills in the name of an interest wider than that of individuals." This would in time " do away with classes and make the best that has been known and thought in the world current everywhere, so that all men might live in an atmosphere of sweetness and light, where they might use ideas freely—nourished and not bound by them." This, to Arnold, was the true " social idea."

Rights of the Individual

A markedly similar view of the state was taken by the Irish writer George Russell (" A.E."), who saw it as " an agency to bring about civilization, to unite men for the common good, to make normal that spirit of unity which is now only manifested in abnormal moments " (e.g. in moments of war). But Russell (whose book *The National Being* appeared in 1916) did not believe either in political democracy or in state economic activities. Representative government worked well, he said,

" so long as parliaments were engaged in formulating general rights, the right, for example, of the individual to think or profess any religion he pleased, or his right not to be deprived of liberty or life without open trial by his fellow citizens. So long as legislatures were affirming or maintaining these rights, which rich and poor equally desired, they were justified. But when legislatures began to interfere in economic matters, in the struggles between rich and poor, between capital and labour, it became at once apparent that the holders of economic power had also political power, and that the institutions which operated fairly where universal rights were considered did not operate fairly when there was a conflict between particular interests."

A Co-operative Commonwealth

The ideal which Russell had in mind was economic freedom together with democratic control of industries, an ideal in every way opposed to the ideal of the majority of the members of the legislatures. The road to this ideal was, he suggested, a vast extension of the co-operative movement.

The co-operative movement offers a plan much more definite than Arnold's, and well in keeping with the tendencies of the 20th century. Many find it easier to imagine a co-operative commonwealth coming into existence than to accommodate their minds to the possibility of a fully socialist state.

But, even if it grew to the stature of Russell's imagination, it is hard to see how "democratic control" could dispense with the machinery of the state. Russell himself admitted that "the domination of the individual by the state must become ever greater." That certainly seems to be the prospect, though it will not happen everywhere in equal measure at the same time ; and one may be sure that when the wheel has come full circle in this direction, it will then revolve in the opposite sense, and a new period of *laissez-faire* may begin - or perhaps autocracy

will come into fashion again. Perhaps the greatest benefit to be got from the study of Politics is freedom from the idea that there is any permanence in human arrangements or even that any one form of government is in itself so very much superior to any other form. "Whatever is best administered is best." We come back in the end to Pope's reflection and have to admit that he was, as usual, very near the truth ; but it must be remembered that the poet had in mind administration by men concerned with culture, justice, and humanity.

BOOK LIST

The Common People, G. D. H. Cole (Methuen) ; *The House of Commons*, Martin Lindsay (Collins) ; *Civilization on Trial*, A. J. Toynbee (Oxford University Press) ; *Unpopular Essays*, Bertrand Russell (Allen & Unwin) ; *The Price of Revolution*, D. W. Brogan (Hamish Hamilton) ; *The English Heritage*, M. W. Thomas (Nelson) ; *The Economics of Welfare*, A. C. Pigou (Macmillan) ; *Essays on Sociology*, Karl Mannheim (Routledge & Kegan Paul) ; *The British Empire and Commonwealth*, J. A. Williamson (Macmillan) ; *Commonwealth Emergent*, W. L. Simmet (Mayflower Press) ; *Civilization in Transition*, H. C. Thomas & W. A. Hamm (J. Hamilton Ltd.) ; *Peaceful Co-existence*, A. Rothstein (Penguin) ; *Tradition of Freedom*, George Bernanos (Dennis Dobson) ; *The French Political Scene*, D. M. Pickles (Nelson) ; *France*, Pierre Maillaud (Oxford University Press) ; *The Great Experiment - An Introduction to the History of the American People*, I. Thistlethwaite (Cambridge University Press).

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LESSON 1

Engineering Materials

THE first and perhaps most important requirement in mechanical and civil engineering is a knowledge of materials used. These can be grouped broadly under three main headings : ferrous metals, non-ferrous metals, and building materials.

Ferrous metals are those metals containing iron : cast iron, wrought iron, and the steels. Non-ferrous metals are those that do not contain iron : aluminium, copper, lead, manganese, nickel, tin, zinc, etc., and their alloys. Under the heading of building materials are grouped the non-metallic substances : timber, stone, brick, cement, and concrete. The special characteristics of materials in general can be summed up as follows.

Elastic material is that from which the effects of distorting forces disappear on removal of those forces, and in which the distortion is proportional to the load that gives rise to it. For example, when a weight is attached to a length of rubber cord, the latter will stretch. With twice the load, the cord will stretch twice as far ; when the load is removed, the cord will return to its original length.

Plastic material is that in which deformation

remains after the load producing the deformation is removed. Putty is an example.

Brittle material will fracture with little warning : for example, glass.

Ductile material will show considerable distortion before it breaks.

Malleability implies the capacity for being shaped by hammering, pressing, or rolling.

Hardness implies resistance to abrasion or indentation.

Cast Iron

Cast iron is a combination of iron with from 2 to 4.5 per cent. of carbon. It is manufactured by smelting iron ore, an oxide of iron, with coke in a blast furnace (Fig. 1). The furnace is fed from the top with alternate layers of ore, fuel, and a flux (usually limestone). The blast, usually hot air, enters the burning mass near the bottom, and chemical changes take place as the charge gradually descends from the top to the smelting zone, where the intense heat causes the iron to melt and collect on the hearth at the bottom of the furnace. It is drawn off at intervals and cast into pigs, when it is called pig iron, or it is used in its molten state for conversion into steel. Above the molten iron in the furnace is a layer of molten slag, which is drawn off at intervals. As the fuel is burnt, the level is maintained by adding coke, ore, and flux. The operation of the furnace is continuous, and a well-maintained unit will continue in operation for several years.

Before the pig iron can be used in the foundry for the production of iron-castings, the impurities usually present—silicon, sulphur, phosphorus, etc.—must be reduced by treatment. The mechanical properties of cast iron depend to a large extent on the condition of the carbon present. If the carbon is in chemical combination with the iron, a hard, very brittle, white iron is produced ; if the carbon is in the form of graphite flakes, a soft grey iron results. By adjustment of the rate of cooling, by control of impurities, and by the use of suitable alloying elements, a wide range of cast iron is produced.

Advantages and Disadvantages

The advantages of cast iron as constructional material include its cheapness, its suitability for the production of intricate shapes, i.e. castings, and the ease with which it can be machined. Its disadvantages are its weakness in tension, its brittleness, and lack of ductility. Cast iron can be made more malleable by reducing the amount of carbon present. This is done by maintaining the castings at a

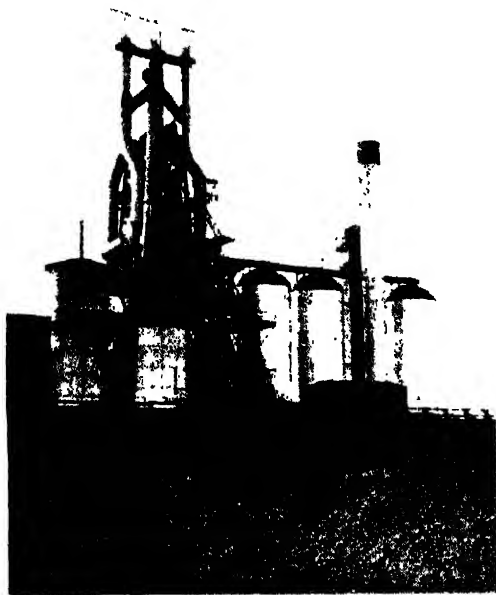


Fig. 1. BLAST FURNACES. Exterior view of iron works at Tollercross, near Glasgow. The furnaces are fed from the top with alternate layers of ore (seen in the foreground), fuel, and a flux (usually limestone)



Fig. 2. ROLLING MILL. Here steel ingots are reduced to a required size. This reversing mill, 8 ft. by 3½ ft., powered by a 6,500-h.p. motor, rolls ingots of up to 6 tons in weight down to smaller dimensions.

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temperature of about 850° C. in the presence of red iron oxide for several days. By this method a large proportion of the carbon present is removed by oxidation.

Wrought iron usually contains less than 0.12 per cent. of carbon. It is obtained by burning the carbon and other impurities out of pig iron in a puddling furnace. The iron is removed from the furnace as pasty balls or blooms; these are squeezed under a hammer to weld the particles of iron together, and to press out as much as possible of the liquid slag with which the iron is saturated. The bloom is then rolled into bars, which are cut into pieces, bundled together, reheated, and again rolled into bars. The process is repeated a number of times. The result is a fibrous, elastic, and ductile material. Except for chains and large difficult forgings, wrought iron has been almost entirely superseded by mild steel.

Steel

Steel is iron to which has been added one or more alloying elements. It is produced by purifying pig iron from the blast furnace. After purification, the alloying elements are added and the mixture is cast into moulds to form ingots. Forgings are made from the ingots, or the latter are reduced in the rolling mill to a required section (Fig. 2).

Mild steel contains 0.05 to 0.25 per cent. carbon. The ordinary commercial mild steel is the most important structural material of the present day. It can be produced cheaply and of consistently good quality; it can be rolled into shapes or plates, forged, and welded, but it cannot be hardened by heat treatment (Fig. 3).

Carbon steel contains from about 0.3 to 1.4 per cent. of carbon. Steels containing 0.3 to 0.5 per cent. of carbon are used where a higher tensile strength than that given by mild steel is required. As the carbon content increases, so the tensile strength improves but there is a loss of ductility. Very high carbon steel containing

about 0.8 to 1.4 per cent. of carbon is used for cutting-tools. Steels in this group can be hardened by heat treatment.

Alloy Steels

Alloy steels are carbon steels to which has been added a definite percentage of an alloying element, such as nickel, chromium, vanadium, manganese, silicon, or tungsten. In the absence of the alloying element the steel would be too brittle. Apart from the improved mechanical properties that alloying elements impart to

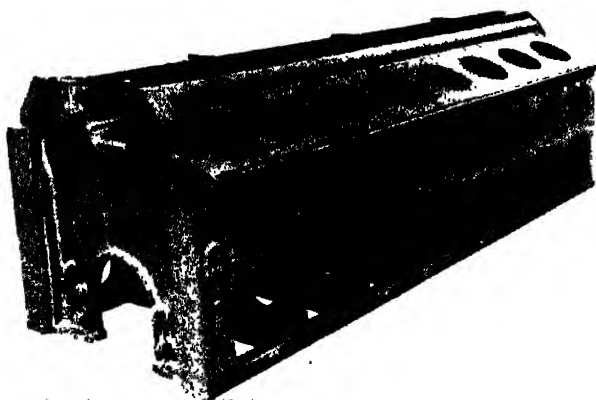


Fig. 3. CRANKCASE FABRICATED FROM MILD STEEL PLATE, and arc welded. It is for a large locomotive diesel engine.

Courtesy of Davey, Paxman and Co. Ltd.

steel, some of them, in particular chromium and nickel, are used to improve corrosion resistance. Stainless steel contains from 12 to 18 per cent. of chromium and up to 10 per cent. of nickel, according to the grade.

Heat treatment is a process in which the steel is first heated to a definite temperature and then cooled in some particular way. The object is to adjust the chemical structure of the steel to give the required mechanical properties. The most important processes that fall under the heading of heat treatment are here briefly described.

Heat Treatment Processes

In normalising, the steel is heated to a temperature of about 50° C. above what is called the critical range, held at that temperature for about 15 minutes, and then allowed to cool slowly. The critical temperature and the rate of cooling are determined according to the composition of the steel. This treatment is to remove internal stresses caused during manufacture.

In annealing, the object is to reduce the material to the softest condition possible. The material is heated to above the critical range and held at that temperature for some hours or even days and allowed to cool slowly, usually in the furnace.

To harden steel it is heated to approximately 750° C. and cooled rapidly (quenched) in air, oil, or water, according to the type of steel. For ordinary purposes quenched steel is much too hard and brittle, and it has to be tempered by reheating to a lower temperature followed by slow cooling. This decreases the hardness

and improves the ductility, the hardness depending upon the tempering temperature.

In case hardening, a soft steel is given a hard case. The steel is heated in the presence of a substance that gives off carbon monoxide. During the process the surface of the article absorbs carbon, becoming a high carbon steel case; the interior or core is unaffected. As a result of the slow cooling, however, the material will be in a soft condition and must be hardened and tempered to develop the desired properties. Nitriding and nitrocarburising are other methods by which certain steels can be given a hard case.

Cold working is an effective method of reducing material to exact dimension (Fig. 4). It is used in the manufacture of thin sheets, bars, wire, etc. The effect of cold work on a steel is to increase the steel's strength and reduce the ductility.

Copper and Aluminium

Copper is a soft ductile metal seldom used in its pure state except as an electrical conductor. It does, however, form the basis of a wide variety of alloys of great importance to the engineer. Alloyed with zinc it becomes brass, an alloy which, according to the proportion of zinc, gives a material ideal for the production of small machined parts, press-formed articles, and castings. Copper alloyed with tin becomes bronze, a tougher material than brass and suitable for bearings, gears, etc. Other copper-base alloys are aluminium-bronze, chromium-bronze, naval brass, phosphor bronze, and gun metal.

Aluminium is obtained by the electrolytic reduction of bauxite, a hydrated oxide of the

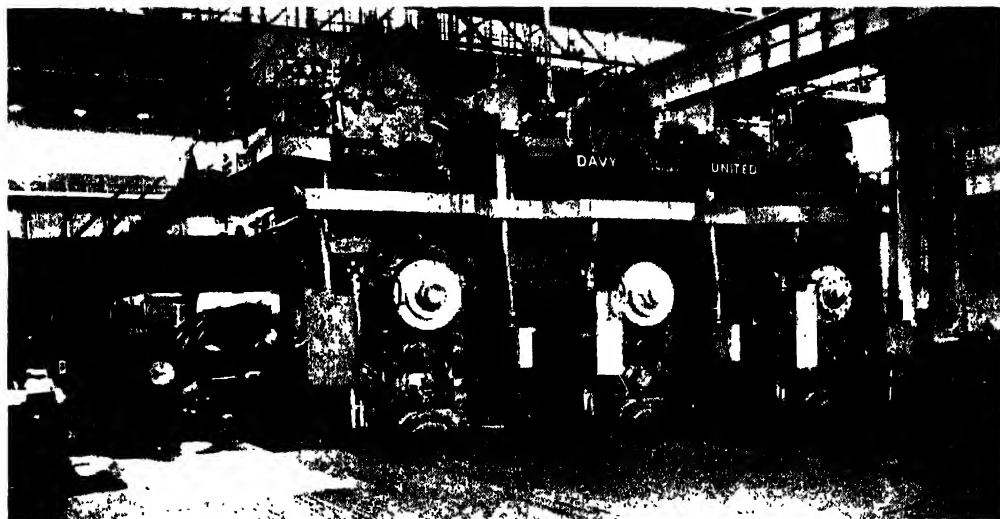


Fig. 4. COLD STRIP MILL FOR STEEL. Cold working is a method of reducing material to exact dimensions. This mill can roll strip up to 74 inches wide at speeds of up to 2,035 feet per minute. Housings on the mill each weigh 100 tons.

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Fig. 5. HOT BREAKING-DOWN MILL. Aluminium is very malleable and ductile and can be rolled into thin sheets or drawn into wire. A hot breaking-down mill for aluminium and other non-ferrous alloys is shown here.

Courtesy of Institution of Mechanical Engineers

metal which occurs naturally. It is very malleable and ductile and can be rolled into very thin sheets or drawn into wire (Fig. 5). Like iron, it is seldom used in its pure state but is alloyed with other metals to improve its properties. The chief alloying elements are copper, silicon, zinc, iron, magnesium, and manganese. These, called light alloys, were first used extensively by the aircraft industry. Aluminium alloys have displaced iron and steel in the making of domestic utensils, in ship-building and bridge-building.

Magnesium is even lighter than aluminium, but it is more difficult to fabricate, and because of this it has little application except in the aircraft industry where weight is all-important.

Cement and Concrete

Portland cement is the most important of the cements. It is manufactured by mixing together definite proportions of carbonate of lime (chalk or limestone) and silicate of alumina (clay), burning the mixture at a high temperature, and grinding the resulting clinker to a fine powder. Concrete is made by mixing together cement, sand, and a coarse aggregate. These are mixed dry, then water is added, and the wet mixture is placed or poured into position. The mixture must be evenly wet throughout, neither runny nor too stiff. Normally the concrete when in position should be not less than two inches thick. It hardens in about 24 hours, but full

strength takes two or three weeks to develop.

The ratio of cement to sand plus aggregate varies, according to the purpose to be served. The range is from 1 : 3 to 1 : 12, a common proportion for ordinary foundation work being 1 : 6. The fine aggregate, i.e. the sand, should consist of hard, sharp, clean particles free from organic matter. The coarse aggregate should also be hard, clean, and free from clay or organic matter. Broken granite, flint, sandstone, limestone, or shingle from the seashore or riverbed, all are suitable for the making of concrete.

LESSON 2

Stress and Strain in Materials

THE effect of external loads on materials, and the means by which the ability of any material to withstand those loads can be assessed, must be known to the engineer. This involves the study of the mechanical properties of materials (as distinguished from the study of the internal or chemical structure, a specialised branch of engineering called metallurgy).

Suppose that a bar of length l , Fig. 6, is subjected to a load W . Measurement will show that there is a certain increase of length. This increase in length, denoted δl , is called the extension produced by the force W . The increase in length per unit length is called the strain. Thus

$$\frac{\text{extension}}{\text{original length}} = \frac{\delta l}{l} = S.$$

The external force W will set up

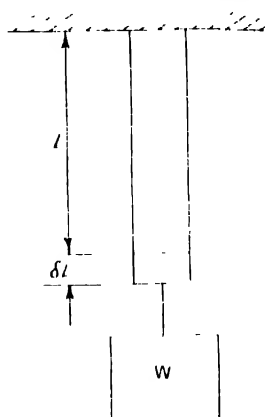


Fig. 6. Tensile stress and strain.

internal forces within the material of the bar. It is convenient to calculate these internal forces as load per unit area. Thus

$$\frac{\text{external load}}{\text{cross sectional area}} = \frac{W}{a} = t$$

and this is called the tensile stress. In an elastic material the ratio of the stress to the strain is constant—a relationship known as Hook's Law, after its discoverer. This ratio is called the modulus of elasticity. Hence

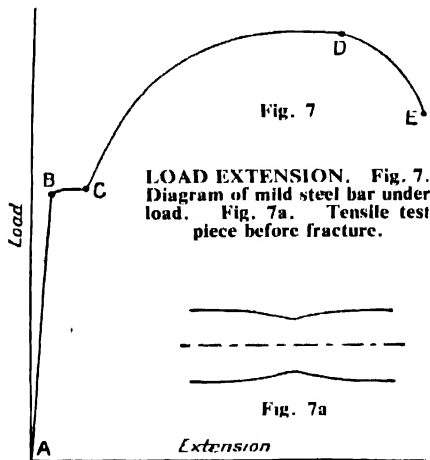
$$\frac{\text{stress}}{\text{strain}} = \frac{t}{S} = t \cdot \frac{l}{\delta l} = E$$

where E is the tensile modulus

of elasticity (often called Young's modulus, after the British physicist Thomas Young, 1773-1829, who first determined its magnitude). The magnitudes of f and E must be expressed in the same units, i.e. if the stress f is expressed in tons/in² the modulus of elasticity must be expressed in tons/in².

When a piece of metal, say a steel bar, is gripped at the ends and tensile load is applied, an extension will take place, and this extension can be measured. Fig. 7 shows the nature of the relation between load and extension, load being plotted vertically, extension horizontally. As the load increases, the bar first extends uniformly, as shown by the straight line AB. This is the elastic portion of the diagram: note that the extension in this range is very small. The point B is called the yield point, because here the material enters the plastic range.

From B to C the extension of the bar proceeds without any addition to the load. It has been found, indeed, that once the adhesion of the material begins to break down, it will continue to yield with a reduced load. After a certain extension, a further load must be applied to



continue the deformation, as shown by the portion CD of the diagram. The point D gives the maximum load applied; at this point the material begins to extend locally, forms a waist, as shown in Fig. 7a, and eventually fractures, while the load falls from D to E. The most important results gained from such a test are

- (1) Yield stress, i.e. the load at point B divided by the original area,
- (2) Ultimate stress, i.e. the load at point D divided by the original area,
- (3) The elongation of the specimen during the test: this gives an indication of the ductility of the material.

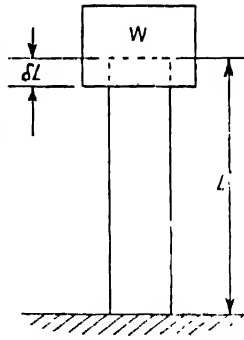


Fig. 8. Compressive stress and strain.

The load-extension diagram, Fig. 7, is obtained by gradually increasing the load on the specimen. It is always necessary so to proportion the member that the stress never reaches the value at the yield point, otherwise a permanent deformation will occur.

The shape of the load-extension diagram (Fig. 6) will vary according to the material under test. In some circumstances it is very difficult to determine the actual yield point, and for

this reason it is usual to specify not the yield stress but the proof stress. This can be defined as the load per square inch of original area, which, applied to the specimen for 15 seconds, will not produce a permanent change of length of more than one-half per cent. of the original length. For all practical purposes the proof stress can be considered equal to the yield stress.

If the direction of the application of the load W is reversed the bar will be in compression (Fig. 8). The alteration in length will be a contraction instead of an extension, and the stress and strain produced will be a compressive stress and a compressive strain respectively. The ratio of these values will be the compressive modulus of elasticity, which can be taken as equal to E , the tensile modulus of elasticity. Thus the same relationship and equations given under tensile stress and strain will hold for compressive stress and strain, but it must be noted that unless a bar subject to compressive has a large cross-sectional area relative to its length it will tend to bend or buckle. The equations apply only to bars which do not bend under compressive loads.

Consider A, B, C, D (Fig. 9) as a projecting length, L , of a body rigidly held at AD supporting a load W at B. If the length L is so

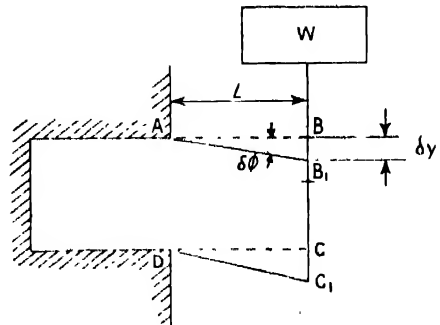


Fig. 9. Shear stress and strain.

short that the bending set up is negligible, the body will deform to the form A, B, C, D. This kind of deformation is called shearing and the angle $\delta\phi$ is called the shear strain. The angle $\delta\phi$ is expressed in radians, and since it is very small $\delta\phi$ can be taken as equal to $\frac{\delta y}{L}$. The

shear stress is obtained by dividing the load by the cross-sectional area : and, as in the case of tensile and compressive stress, the ratio between the shear stress and the shear strain is a constant. Hence

$$\begin{aligned} \text{shear stress} &= f_s = \frac{W}{a} \\ \text{and } \frac{\text{shear stress}}{\text{shear strain}} &= \frac{f_s}{\delta\phi} = \frac{f_s \times L}{\delta y} = G \end{aligned}$$

where G is the modulus of elasticity in shear, often called the modulus of rigidity.

In addition to the load-carrying capacity of a material there are other important mechanical properties, for example hardness, impact strength, and fatigue strength.

Hardness Tests

Hardness tests are for investigating and assessing the physical condition of the surface of a material where the "hardness," i.e. the abrasion and the indentation resistance, is important. The tests also give valuable information regarding the quality of the material when it is not possible or convenient to carry out the usual tensile tests. They are also used to investigate the effects of heat-treatment, hardening and tempering, and of cold working. There are several methods of hardness testing, the Brinell and the Rockwell being most commonly usual.

In the Brinell test a hardened steel ball is pressed into the surface of the material under test by a static load acting for a definite length of time. The load, in kilograms, divided by the spherical area of the indentation in square millimetres, is called the Brinell hardness number. Alternative to the measuring of the dimensions of the indentation by means of a microscope is a direct reading machine, of which the Rockwell is an example. The indenting tool is first applied under a definite light load which is afterwards increased up to the specified indentation load.

The Rockwell hardness number is read direct from a scale which indicates the depth of penetration. The dial has several scales, and different indentation tools can be fitted, this enabling the machine to be used equally well for hard and soft materials and for small and thin specimens.

Certain materials, particularly heat-treated steels, may show great weakness when subjected to shock loads, yet the results of ordinary tensile tests appear quite normal. In the Izod test a notched bar specimen is broken by the

impact of a swinging pendulum. The Izod figure for the material under test is the amount of energy in foot-pounds required to fracture the specimen.

A problem that confronts the engineer arises from the fact that materials may fail when subjected to repeated applications of a load considerably less than the normal breaking load determined by static test. In normal structural engineering the type of materials used, the safety factor employed, and the type of load encountered, are such that fatigue problems seldom arise ; but in high-speed machinery and in aircraft structures, which are subject to rapidly alternating stresses during certain flight conditions, the fatigue strength is of far greater importance to the engineer than the yield or ultimate.

Fatigue Strength Tests

To determine the static strength of a material requires only a single test, whereas the finding of the fatigue strength may involve 20 or 30 separate tests, some of which will take days to complete. A number of identical test specimens must be prepared. The test is carried out by subjecting a specimen to a known alternating stress until it fractures, and this is repeated on fresh specimens at differing stresses until sufficient results have been obtained to plot the S/N diagram in Fig. 10. The diagram shows S the stress plotted against N the number of cycles or reversals of stress to cause failure.

As the stress is reduced and the number of cycles to fracture increases, the curve becomes more and more nearly horizontal ; which

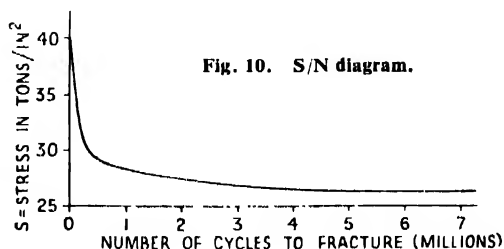


Fig. 10. S/N diagram.

indicates that for practical purposes a value of stress can be chosen at which the risk of fatigue failure is negligible. With this information the aircraft designer can design for a definite life ; but there are so many indeterminate stresses that when for weight considerations high stresses are used it is usual to fatigue-test whole sections of an aircraft and even entire aircraft.

The stresses which occur in any part of a structure are calculated from the known loads, including the weight of the structure itself ; it then remains to determine the safe load for that member. The ratio between the alternate stress for the material and the applied stress is

called the safety factor. This factor is based mainly on experience, and it covers such unknowns as material quality variation, ratio of application of load, erection stresses, maldistribution of load, etc. It will vary according to the degree of control and testing that can be exercised during manufacture. For example: a bridge must be built to a design that cannot be tested, and as a failure would be catastrophic an adequate factor must be allowed.

The effect of temperature is another factor

that must be considered in specifying a material for any particular application. Some materials become dangerously brittle under Arctic conditions, and all metals exhibit at elevated temperature a phenomenon called creep. Creep is plastic flow of a material under load; at normal temperatures it is so slow that it can be ignored, but at higher temperatures the rate of creep increases and it becomes of greater importance to the designer than the yield or ultimate stress.

LESSON 3

Structural Engineering

A FRAMED structure, Fig. 11, is one in which the applied loads are transmitted to the points of support through a number of members connected together. For example, a roof truss carries the load due to the weight of the roof-covering as well as the load due to the action of wind on the roof. These loads are carried by the columns at the ends of the truss, and are transmitted to those columns through the medium of ties (tension members) and struts (compression members) joined together into a complete structure.

It is essential, both from the point of view of economy of material and of safety, that the engineer should estimate accurately the magnitude of the load to be carried by each member of the structure, and also the nature of the load, e.g. whether tensile or compressive. In such a

determination two main principles are followed, viz. the principle of forces and the principle of moments.

Resultant Forces

A force acting on a body is completely specified when its magnitude, direction, and sense (that is, whether a push or a pull) are known. This can be represented by a straight line drawn in the direction in which the force acts, the length of the line representing to a suitable scale the magnitude of the force, and with an arrow to show the sense. For example, the line AB in Fig. 12 represents a force acting in the direction from A to B; if the length of the line is, say, $1\frac{1}{2}$ inches, and the scale used is 1 inch = 6 tons, then the magnitude of the force is $6 \times 1\frac{1}{2} = 9$ tons.

If two forces, P and Q, Fig. 13, act at the same point, their combined effect on the point is the same as that of a single force, R, whose direction and magnitude are found by completing the parallelogram, as shown. The same result is obtained by laying down the two lines representing the forces P and Q as two sides of a triangle, Fig. 14, the arrows following one another; the resultant of these two forces is represented by the third side of the triangle. This resultant tends to move the point of application in the direction shown by the arrow, and the point can be prevented from moving (kept in equilibrium) by the introduction of an equal and opposite force. The equilibrant of two forces can be found by drawing the triangle of forces with the arrows following one another.



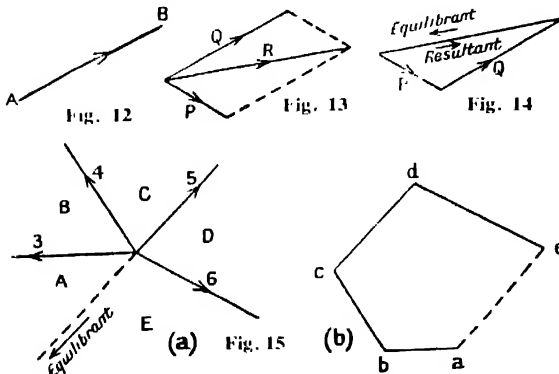
Fig. 11. A FRAMED STRUCTURE. An enormous office building takes shape in London in 1956. Thousands of piles capped with reinforced concrete were sunk to depths of up to 70 feet in the soft subsoil.

Courtesy of Humphreys, Ltd

In more complicated problems a system called Bow's Notation is used (see the Course on MECHANICS, Vol. 1, Lesson 7). Fig. 15 illustrates the application of this system to a simple example. In the diagram (a) the capital letters A B C and D are placed in the spaces between the forces. Thus, reading in a clockwise direction, force 3 becomes force AB, force 4 becomes force BC, and so on. In the force diagram (b) corresponding small letters at the ends of each line determine the force completely; ab indicates that a force acts in the direction from a towards b with a magnitude represented by the length of the line ab, and similarly for the other forces. The closing line, ea, gives the magnitude and direction of the force necessary to preserve equilibrium.

Roof Truss Example

The roof truss shown in outline in Fig. 16 is an example of a framed structure. The loads applied at the joints are due to the purlins carrying the roof covering, and depend upon the covering material used and the area of roof supported by each purlin. The problem here is to determine the magnitude of the force in each member of the truss and whether the member is in tension or in compression. The loading shown in the diagram is that due to the weight of the roof covering alone; when the purlins are equally spaced, the load on each of the extreme purlins is half the load on each of the others, giving the distribution shown in



Figs. 12-15. RESULTANT FORCES. Diagram showing direction and magnitude of forces acting at different points.

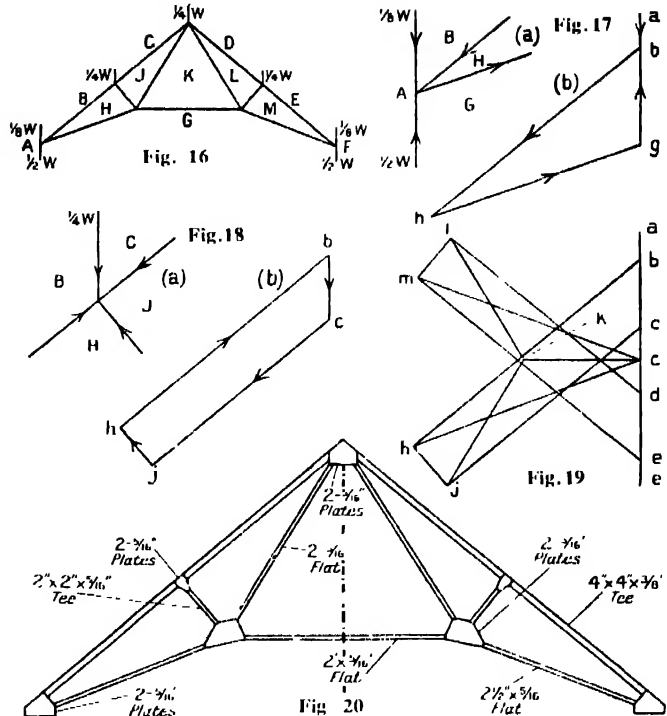


Fig. 16. FORCES IN A ROOF TRUSS. A roof truss with members and joints marked. Figs. 17-19. Determination of forces in members of trusses. Fig. 20. Design of truss.

Fig. 16. The action of the wind on the sloping side of the roof must be included in the final result, but for the sake of simplicity in the present instance this can be ignored. The forces being symmetrically disposed on the truss, the reactions at the ends are equal, and each is equal to half the total downward load. Where the loading is not symmetrical, the magnitudes of the reactions can be determined by using the principle of moments, as explained later in this Lesson.

When the reactions have been determined, it is possible to take each joint in turn and determine the forces in the various members. As already explained, capital letters are placed in the spaces between the forces, the various members themselves being indicated by numbers.

The left-hand support can be considered as a point in equilibrium in the system of forces shown in Fig. 17 (a); corresponding force diagram is shown in (b). Leaving the two unknown quantities, the forces BH and HG, to the last, the diagram is drawn in the following order: ga, ab, a line through b parallel to BH, and a line through h parallel to HG. The intersection of these last two lines gives the point h. Arrows

are inserted in the force diagram in such a way that they all follow each other, the system of forces being in equilibrium. The directions and magnitudes of the forces in members BH and HG are now known. Member BH pushes at the point, i.e. the member is in compression; member HG pulls at the point, i.e. the member itself is in tension.

Proceeding now to the joint at the other end of member BH, the forces at this point are as shown in Fig. 18 (a). Because member HB is in compression, it pushes at the point with a known force, hb (b). The forces in the members CJ and JH are obtained by drawing the force diagram (b); it will be seen that both are compressive.

Each joint can be treated in a similar manner. Instead of drawing separate force diagrams for each joint, all the diagrams can be collected together as shown in Fig. 19. Hence the magnitude and nature of the loading in each member can be determined, and the material can be proportioned accordingly.

Fig. 20 shows the final design of the roof truss. Flat bar is used for the tension members, tee section for the compression members. A flat bar is not suitable for a member in compression, because of its tendency to buckle; the best form of material here is a hollow tube. For light loads the angle and tee sections are commonly used, for heavier loads the section is usually built up from various standard shapes; examples are given in Fig. 21.

Moments of Forces

The moment of a force about a point is given by the product of the force and the perpendicular distance from the point to the line of action of the force. For example, in Fig. 22 the moment of the force P about the point A is equal to $P \times r$. If P is a force of, say, 5 lb., and the distance r is 2 feet, then the moment is $5 \times 2 = 10$

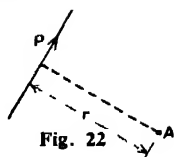


Fig. 22

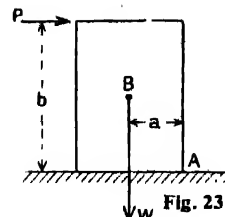


Fig. 23

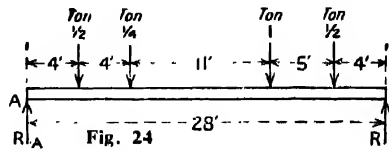


Fig. 24

Figs. 22, 23, 24. MOMENTS OF FORCES.
Moments in different directions.

lb. ft. The moment measures the tendency to turn or rotate about the given point, clockwise or anti-clockwise in direction. In Fig. 22 the direction is clockwise. A rigid body in equilibrium under the action of any forces will have no tendency to rotate provided the algebraical sum of the moments is zero.

Reactions of Loaded Beams

The same method can be used in a great variety of problems, e.g. determination of the reactions at the supports of a beam loaded as shown in Fig. 24. In this instance there are two unknown forces, R_A and R_B , the reactions at the supports A and B . By taking moments about the point of application of one of the two unknown reactions the moment due to that reaction is zero, leaving only one unknown quantity. Thus, taking moments about B , we have: clockwise moments - anti-clockwise moments, i.e.

$$R_A \times 28 - \frac{1}{2} \times 4 + 1(4 + 5) - \frac{1}{4}(4 + 5 + 11) + \frac{1}{2}(4 + 5 + 11 + 4) = 0$$

$$\text{Therefore } R_A = \frac{28}{28} = 1 \text{ ton.}$$

The reaction at the other end can be determined by taking moments about the point A , or, even more simply, thus: Since the beam is in equilibrium under the action of a system of vertical forces, the sum of the upward forces must be equal to the sum of the downward forces, i.e.

$$R_A + R_B = \frac{1}{2} + \frac{1}{4} + 1 + \frac{1}{2} = 2\frac{1}{2} \text{ tons.}$$

$$\text{but } R_A = 1 \text{ ton.}$$

$$\text{therefore } R_B = 1\frac{1}{2} \text{ tons.}$$

Fig. 25 shows a beam fixed at one end and free at the other (called a cantilever), with a load applied at the free end. The beam,

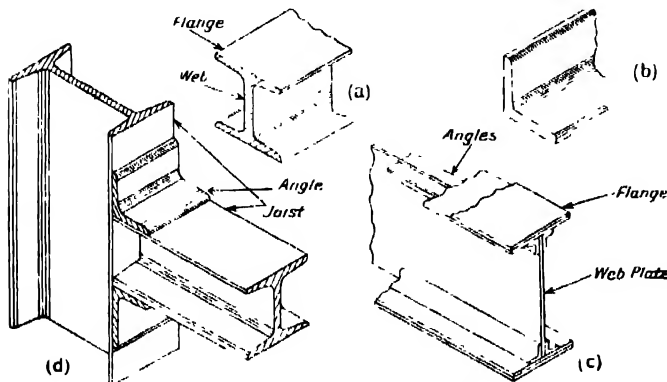
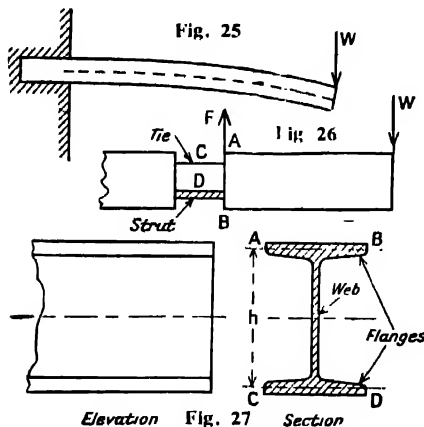


Fig. 21 CONSTRUCTIONAL STEEL. (a) Joist section; (b) angle section; (c) fabricated joist; (d) typical joint between horizontal beam and a column

originally straight, is deflected downwards at the loaded end, and the final shape is somewhat as shown. The material in the upper layers is stretched, i.e. subjected to a tensile stress, while that in the lower layers is in compression. The stress is greatest at the outside layers where the strain is greatest. At some layer, shown dotted in the figure, the strain is zero; this layer is called the neutral layer, and it passes through the centre of area of the beam section.

Shearing Force

The convenient way to examine the conditions at any particular section of the cantilever shown in Fig. 25 is to imagine the cantilever to be cut through as shown at AB in Fig. 26. The forces which have to be applied to the right-hand portion of the cut beam to keep it in its original position are the same character as the forces exerted by the material at the section before the beam was cut. It will be seen that the right-hand section can



Figs. 25-27. BENDING MOMENT. Examination of bending moments and shearing forces in beams.

be kept in equilibrium by the insertion of an upward force F , equal and opposite to the load at the end, and a tie at C and a strut at D. The force F which acts normal to the beam is called the shearing force and it produces a

shear stress = $\frac{\text{shearing force}}{\text{cross sectional area}}$. Taking

moments about this same section AB, the product of the load and the distance between the load and the section under consideration is called the bending moment. This is balanced by an equal and opposite moment, produced by the forces acting within the material of the beam, called the moment of resistance of the section.

The bending moment, and sometimes, according to the type of loading, the shearing force.

will vary from section to section along the length of a beam or cantilever. The problem of the engineer is to determine these loads at every section and so arrange the materials that the moment of resistance is sufficient to withstand the bending moment, due to the applied loads, without allowing the tensile and compressive stresses in the material to exceed their safe maximum values. As previously explained,

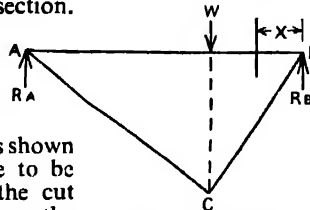


Fig. 28. Plate girder loading.

the stress is zero at the neutral layer, and it increases uniformly with the distance from this layer. In order to use the material economically, as much as possible of it should be subjected to the maximum stress. For this reason the rolled steel joist, Fig. 27, is generally used for beams; note

that most of the material is concentrated in the flanges, farthest from the neutral axis. If a = the area of each flange, in sq. inches, and f = the stress in the material, in lb./sq. inch, then the force in each flange = $a \times f$ lb. Hence, if the effect of the material in the web is neglected and the material in the flanges is assumed to be concentrated at the lines AB and CD, then the moment of resistance (force multiplied by distance) at any section of the beam is $a \times f \times h$ lb. inches, where h is the distance in inches between lines AB and CD.

These assumptions with regard to the distribution of the material in the flanges give results which are only approximately correct, especially for the smaller sizes of beam. For large beams the method is sufficiently accurate in most instances; in fact, this method is universally used in the design of built-up plate girders. An example will show how the foregoing principles are applied. The bending moment in a beam varies from point to point in the beam, and depends upon the nature of the loading. In Fig. 28, AB shows a beam supported at the ends and carrying a single load. The reactions R_A and R_B can be determined

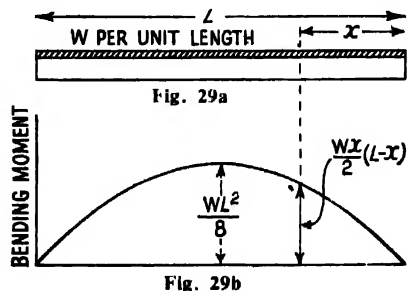


Fig. 29a. Uniformly loaded beam.
Fig. 29b. Variations of bending moment.

by taking moments about each support. It has been shown that, at any section at a distance x from the support B, the bending moment is equal to $R_B x$. Therefore the bending moment increases uniformly from zero at points A and B, and reaches its maximum value at the load. The variation of the bending moment along the beam is shown by the lines AC and BC in Fig. 28. The vertical distance from the beam to the line AC or BC gives the bending moment at the particular section considered.

For a beam loaded uniformly along its length, the variation in the bending moment is shown by the curve in Fig. 29 (b). Since the applied bending moment varies along the beam, so also does the required moment of resistance of the beam. The flanges carry most of the bending stresses while the web carries the shearing force. Hence, for a given value of safe stress (f) in the material, the product $a \times h$ (Fig. 27) should vary in the same manner as the bending moment diagram.

To match the bending moment curve exactly would require the use of tapered flanges. This would not be economical, but by increasing the thickness of the flanges by adding plates, Fig. 30 (a), a moment of resistance diagram as shown in Fig. 30 (b) can be produced. It should be clear that by varying the length and

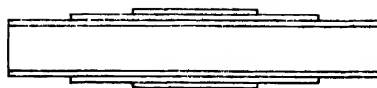


Fig. 30a Side elevation of a plate girder.

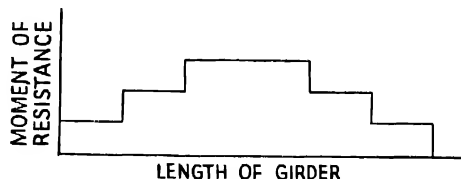


Fig. 30b. Graph showing moment of resistance of a plate girder.

the thickness of the plates the shape can be varied and made to approximate closely to the actual bending moment diagram. This type of girder is commonly used for road and railway bridges of short span. An alternative construction is to keep the flange of uniform area, and vary the depth of the girder; in this instance, if one flange is horizontal, the other will be curved to the shape of the bending moment diagram. This also is a common type of girder for short-span bridges.

LESSON 4

Modern Bridge Building

BRIDGES can be divided into three main types: girder, arch, and suspension. Generally speaking, girder bridges are used for short spans, suspension bridges for the longest spans, the arch type for intermediate spans. The greatest part of the load carried by any bridge is the weight of the material of the bridge itself.

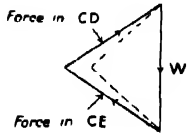
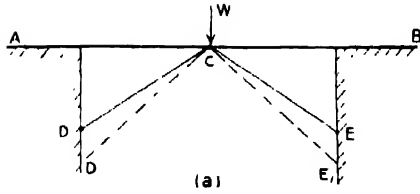
Girder bridges vary in details. The simplest is the plate girder, commonly used for short spans over railways and roads. For somewhat

longer spans some form of framed truss is used. A bridge of this type, the Khartum-Omdurman bridge of the White Nile, is shown in Fig. 31. The cross-bracing from one girder to the other is to resist lateral forces due to wind pressure. The principles followed in the design of a girder bridge of this type are exactly the same as those used in the determination of the forces in the various members of a roof-truss.

In arch bridges, construction principles are as in Figs. 32 and 33. In Fig. 32 (a) AB



Fig. 31. GIRDER BRIDGE. Khartum-Omdurman bridge over the White Nile.



(a)

Figs. 32, 33a, 33b. BRIDGE BUILDING. Principle of construction of arched bridges (see text).

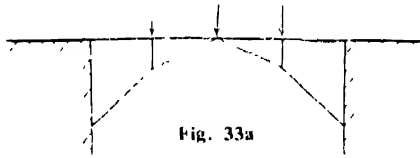


Fig. 33a

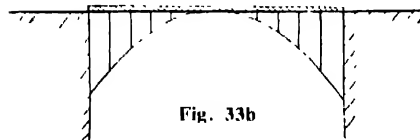
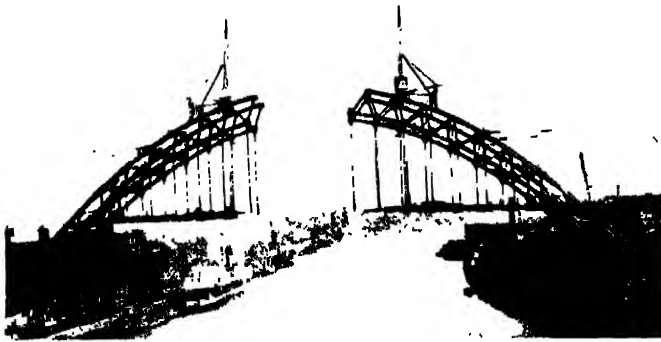


Fig. 33b



represents the roadway or railway. To reduce the problem to its simplest form, there is, in this instance, only one support, at C, the junction of the two struts CD and CE. If the connexions C, D and E are pin joints, then for a given downward load at C the compressive forces in the members CD and CE can be determined as shown in the force diagram Fig. 32 (b). The force in the member depends upon its slope; the dotted lines in (b) correspond to the dotted positions CD_1 and CE_1 of the two compression members.

When loads are applied at three points, Fig. 33 (a), the best shape for the compression members is as shown. When the applied load

is continuous, the arch form in Fig. 33 (b) is constructed, with vertical supports for the bridge roadway at intervals. A modification is shown in Fig. 35. Here the arch is partly above and partly below the bridge roadway. Fig. 34 is a view of the same bridge during construction, which was carried out simultaneously from both sides towards the centre. The photograph shows the horizontal cables which were used to support the weight of the bridge during erection.

The bridge in Fig. 36 is that over Australia's Sydney Harbour. The main span measures 1,650 feet. Head-room at high water is adequate for craft of liner size. Total length of the bridge is 3,770 feet. It comprises two footways, four lines of railway, and a central roadway 57 feet wide. The construction is similar to that of the Tyne Bridge, Fig. 34.

An example of the double cantilever principle is the Forth Bridge, shown in Fig. 37. Two large openings of 1,710 ft. span give a clear height of 150 ft. above high water at the centre of each. The total length of the Forth Bridge is about $1\frac{1}{2}$ miles.

A suspension bridge comprises a platform suspended from steel cables which are passed over high abutments or towers and anchored at the land-ends. Fig. 38 shows the George Washington suspension bridge over the Hudson river, New York. This has a single span of 3,500 ft., and it clears high water at the centre by about 213 ft. The supporting towers are 635 ft. high. There are four main cables, in two pairs 106 ft. apart, the two cables in each pair being 9 ft. apart. Each main cable is 36 in. in diameter. On the New Jersey side of the river the cables are cemented into solid rock for 250 ft. The New York ends of the cables are anchored in a concrete block 200 ft. wide, 290 ft. long, and 130 ft. high.



ARCH BRIDGE. Fig. 35. Tyne Bridge, Newcastle. Fig. 34 (left). The same during construction.



BRIDGES. Fig. 36 (top left) : Sydney Harbour bridge, of the arch type. Fig. 37 (lower) : the Forth bridge, on the double cantilever principle. Fig. 38 (top right) : the George Washington suspension bridge.

For given conditions of loading on a cable of a suspension bridge, the force in the cable depends upon the dip, i.e. the sag at the centre of the cable. For a load uniformly distributed along the span, Fig. 39 (a), the force in the cable

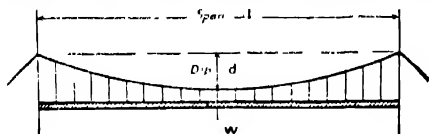


Fig. 39a

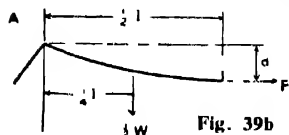


Fig. 39b

Fig. 39a and b. Diagrams illustrating the principles which control building of a suspension bridge.

at centre can be found as follows. Fig. 39 (b) shows half the bridge, with the force F substituted for the tensile force normally exerted by the second half of the cable. The cable is in equilibrium under the action of the

forces at the point A, the downward action of half the total weight applied at one quarter of the span, and the horizontal force F . By taking moments about the point A the unknown forces at this point are eliminated, as their moments become zero. Then :

Clockwise moments = Anti-clockwise moments

$$\text{i.e. } \frac{W}{2} \times \frac{1}{4} = F \times d.$$

$$\text{therefore } F = \frac{W/2}{8d}$$

The maximum load in the cable occurs at the supports or towers, and this is given by the expression :

$$F_{\text{max}} = \frac{W}{2} \sqrt{1 + \frac{1}{160^2}}$$

Thus for a given span and loading condition the load in the cable is reduced as the dip is increased. But a greater dip means increase in height and consequently an increase in cost of the towers.

LESSON 5

Concrete in Engineering

THE resistance of concrete in tension and shear is very poor, and so concrete cannot be used alone where these stresses are appreciable. This is overcome by embedding steel bars in it, the tensile and shear loads then being carried by the steel. This is called reinforced concrete. The advantages gained are the result of three factors:

- (a) The concrete contracts slightly while setting, grips the steel, the two adhere, and the concrete transmits to the steel the stresses it cannot itself carry.
- (b) The coefficients of expansion of concrete and of steel are very nearly equal, hence variations in temperature do not give rise to any serious stresses in the reinforced material.
- (c) The concrete safeguards the steel against corrosion.

Forms or moulds made of timber (called centering or shuttering) are used during construction, to support the wet material and hold it firmly without movement until the concrete is set, the timber being removed after the work

direction of curvature clear. The material is in tension at the bottom face at the middle portion of the span, and in tension at the top face in the neighbourhood of the supports. This type of beam is stronger than a series of simple beams placed end to end,

CONCRETE
STEEL REINFORCING MEMBERS

Fig. 40. Section through a reinforced concrete beam.

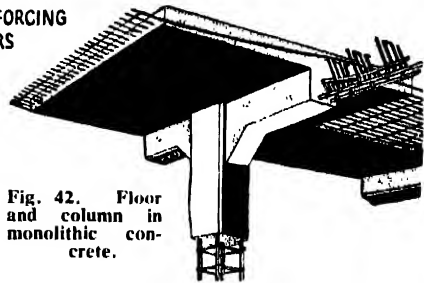
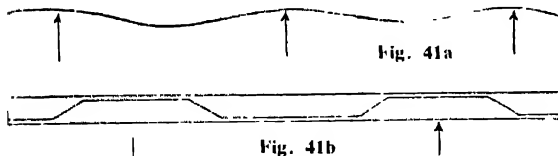


Fig. 42. Floor and column in monolithic concrete.



CONCRETE BEAMS. Fig. 41a. Portion of continuous beam. Fig. 41b. Reinforcement of continuous beam.

has hardened. Round bars of steel are commonly used for the reinforcement, and these are hooked over main reinforcing members. Sometimes twisted square bars, and bars with indentations or projections, are used.

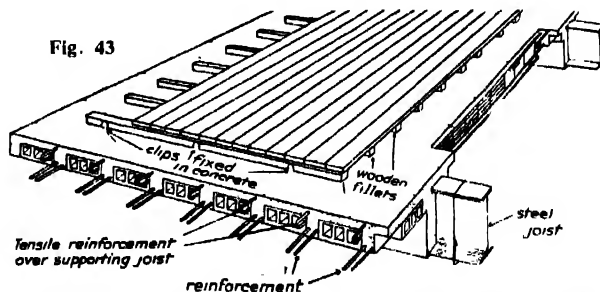
Fig. 40 shows a cross-section of a reinforced concrete beam. It will be noticed that the tensile reinforcing members are situated at that portion of the section where the maximum tensile loads occur. The two smaller bars shown at the top corners are to provide securing points for the shear reinforcing members and to absorb small tensile loads that may occur during construction.

Fig. 41(a) shows a portion of a continuous beam, i.e. one which rests on more than two supports. The deflection is shown exaggerated, to make the

because in the continuous beam the adjacent lengths help to support each other, as shown by the bending at the support. The reinforcement for this beam would be disposed as in Fig. 41(b), the steel bars being bent in order to take the tensile stresses.

Floors for Large Buildings

A very important application of reinforced concrete is in the construction of floors for large buildings. Fig. 42 is an example in which the floor and columns are formed in one continuous mass of concrete with reinforcement as shown. The floor spans are equivalent to a series of parallel continuous beams connected together. The wires projecting upwards from the reinforcement of the main beams are to improve the bond between steel and concrete.



CONCRETE CONSTRUCTION. Fig. 43. Use of hollow tile blocks in floorings. Fig. 44. (right). Concrete pile. Helical Bar and Engineering Co. Ltd

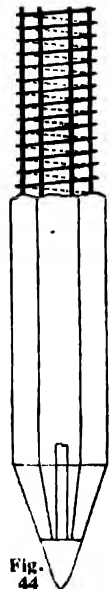


Fig. 44



Fig. 45. BRIDGE IN CONCRETE. Royal Tweed bridge at Berwick, 1,410 ft. long. Three of its four arched spans were, when built, the largest ever constructed in reinforced concrete.

Photo, *The Times*

Floors are lighter when hollow tile blocks are used, as in Fig. 43. Here the reinforcement is arranged between rows of tiles, and the concrete is filled in between and over the tiles to the required depth.

Reinforced concrete is used in the construction of piles for foundations. It is stronger than timber for this purpose; it cannot decay, and marine life cannot harm it. Fig. 44 shows a form of reinforcement consisting of vertical bars in an octagonal pile, the steel bars being wire-bound along the complete length. The

point of this pre-cast pile is shod with iron. Alternatively, piles can be cast "on the job." A hollow steel tube, fitted with a solid steel point, is driven in to the required depth, to serve as the mould. The reinforcement is placed in the tube and concrete poured in. The tube is eventually removed, but the steel point remains.

Girder and arch type bridges are often made of reinforced concrete, an example being the road bridge across the Tweed at Berwick shown in Fig. 45.

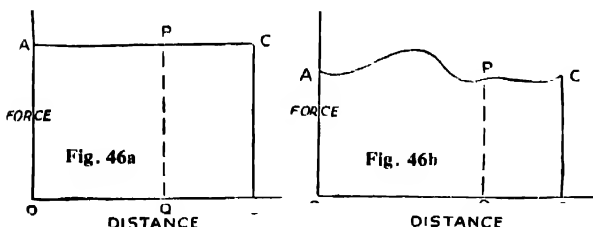
LESSON 6

Work and Power: A Brief Study in Dynamics

WHEN a force is applied to a body, causing it to move, it is said that *work* is done on the body. The quantity of work done is given by the product of the force and the distance through which the body moves in the direction of the force. For example, work is done by a locomotive in drawing a train. Suppose a force of 1,000 lb. is required to move the train, then in 1 mile (5,280 feet) the locomotive does $1,000 \times 5,280 = 5,280,000$ ft. lb. of work. The foot-pound (ft. lb.) is the unit of work used by engineers in Great Britain; it represents the work done in raising a mass of 1 lb. weight through 1 foot.

The work done by a force can be represented graphically, as in Fig. 46(a). Along two lines at right angles, distances are marked off to represent, to a suitable scale, the applied force and the distance moved; thus OA represents the force acting at the beginning of the motion, and OB is the total distance. At the point Q the magnitude of the force acting is represented by the line PQ. If the force remains constant in magnitude during the movement, the point P will move along the line AC, parallel to OB, and the work done is represented by the area of the rectangle OACB (OA \times OB).

When the magnitude of the force varies during the movement from O to B, the variation can be indicated by a curve such as AC in Fig. 46(b). The force acting at any particular point in the line of action of the force is represented by the vertical distance from the base line OB to the curve AC. The force acting at the point Q, for example, is represented by the length of the line PQ. The total work done is represented by the area OACB enclosed beneath the curve showing the force variation.



Figs. 46a and 46b Area under curve represents work done by a force.

Power is the rate at which work is done. The unit is the horse-power, which indicates that work is done at the rate of 33,000 ft. lb. each minute. In the example of the locomotive (at the beginning of this Lesson) the total work done in moving the train 1 mile is 5,280,000 ft. lb. If the train is moved this distance in one minute, the rate at which the work is done is

5,280,000 ft. lb. per minute, or

$$\frac{5,280,000}{33,000} = 160 \text{ horse-power (h.p.)}$$

If the time taken is two minutes, the work will be done at the rate of

$$\frac{5,280,000}{2} = 2,640,000 \text{ ft lb per min.}$$

or 80 horse-power.

When a force travels in a circular path instead of in a straight line, the work done is (as before) the product of the force and the distance through which it moves. Consider a force of 10 lb. applied to the end of a lever fixed to a shaft, the point of application of the force being 3 feet from the centre of the shaft. In each revolution the force moves through a distance equal to the circumference of a circle of 3 feet radius, i.e.

$$6.28 \times 3 = 18.84 \text{ feet.}$$

The work done is therefore

$$18.84 \times 10 = 188.4 \text{ ft lb}$$

If the shaft makes 1,000 revolutions per minute (R.P.M.), the rate at which work is done is

$$188.4 \times 1,000 = 188,400 \text{ ft lb per min.,}$$

and the horse-power transmitted is

$$\frac{188,400}{33,000} = 5.7 \text{ h.p.}$$

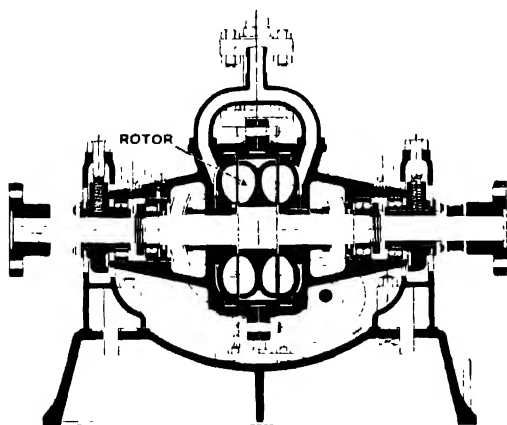


Fig. 48. WATER BRAKE DYNAMOMETER. Sectional drawing of a rotor carried on a shaft and running in a fluid filled casing. Courtesy of Heenan & Froude, Ltd.

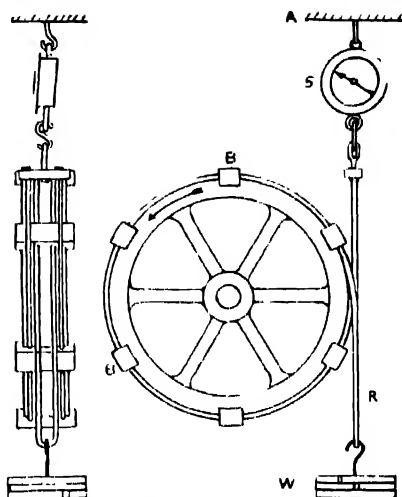


Fig. 47. Absorption dynamometer, rope brake type. B, wooden blocks; S, spring balance; A, fixed beam; R, rope; W, load on brake; side view on left.

Most heat engines deliver their energy in rotary motion, and most of the instruments and apparatus used for the measurement of power are therefore concerned with energy in rotary form. They are of various types, including absorption dynamometers and transmission dynamometers.

The rope brake is an absorption dynamometer. Here the mechanical energy generated by the engine is absorbed by the friction of a rope or belt against a rotating drum or flywheel of the engine, as in Fig. 47. The wooden blocks B keep the rope in position on the surface of the flywheel. The rope R is continuous, and is attached to the heavy weight W at one end and to the spring balance S at the other end; the spring balance itself is secured to a fixed part A. The moment of W about the axis of the shaft is opposite in direction to the motion of the shaft, i.e. the tendency is to oppose the shaft's rotation. The energy in rotating the flywheel is wasted in friction between rim and ropes, and is dissipated in heat.

If W downward pull on rope in lb.,

S upward pull on rope, indicated on spring balance, in lb.,
then net downward force = $W - S$ lb.

If R effective brake radius, in feet, measured from centre of rope to centre of shaft, then the moment resisting rotation of the rim

$$(W - S) \times R \text{ lb ft.}$$

Energy absorbed by the brake in each revolution
= work done against friction

$$(W - S) \times 2\pi R \text{ ft. lb.}$$

Energy absorbed per minute = $(W - S) \times 2\pi RN$ ft. lb

where N = speed of rotation in r.p.m.

$$\text{Therefore horse-power} = \frac{(W - S) \times 2\pi RN}{33,000}$$

Fig. 48 shows a dynamometer of the water brake type. It consists essentially of two main parts, a rotor fixed to the shaft and a casing pivoted on the shaft. Both rotor and casing are provided with a large number of pockets. These pockets are filled with water, and the rotation of the rotor inside the stationary casing causes the water to be flung backwards and forwards from rotor to casing. The energy absorbed by the water is converted to heat, so that the water increases in temperature; this is allowed for by ensuring a continuous supply of fresh water while the heated water flows away to waste. The casing, being suspended on the revolving shaft, would revolve with the shaft if not prevented from doing so. The necessary constraint is provided by a weight attached at the end of a lever fixed to the casing. The weight is adjusted until the casing is just balanced, when the product of this force and its distance from the centre of the shaft gives the moment resisting rotation; the horse-power is calculated as for the rope brake previously described.

Torsionmeter

The torsionmeter is an example of the transmission type of dynamometer, the power transmitted along a shaft being determined by the amount of twist in a calibrated portion of the shaft, together with the speed of revolution. The principle is indicated in Fig. 49. Two disks, A and B, are mounted on the shaft, disk A having a small mirror, and B a small slot. A ray of light from a fixed lamp shines through the slot, and is reflected from the mirror on to a

fixed scale. When the shaft is not transmitting power, the ray of light coincides with zero on the scale. When a twisting moment is applied to the shaft, the material of the shaft is strained to an extent proportional to the applied moment, so that one disk will be twisted slightly relative to the other and the spot of light will be deflected on the scale. The spot of light will

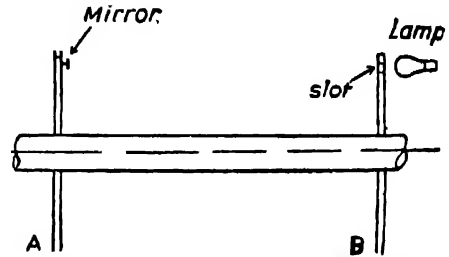


Fig. 49. TORSIONMETER. Transmission type of dynamometer. The principle on which it works is described in the text of this Lesson.

shine on the scale only at one particular instant during each revolution, but, unless the speed of revolution is comparatively low, the scale reading will appear to the eye to be continuous. The apparatus can be calibrated by subjecting the shaft to certain known twisting moments, and noting the resulting scale readings. The twisting moment corresponding to any particular scale reading can then be determined:

$$\begin{aligned} T &= \text{twisting moment in ft. lb. and} \\ N &= \text{speed of revolution in r.p.m.} \\ \text{h.p. transmitted} &= \frac{1}{33,000} T \cdot 2\pi N \end{aligned}$$

LESSON 7

Power Transmission: Gears, Belts, and Chains

GEARING is the mechanical appliance used to transmit power from source to point of application. The gearing may be necessary because the power generated is not of the exact nature required, or the power is not in the required position.

There are two general arrangements used for driving the machines in a workshop. In one, the main shaft, driven by the source of power, extends along the length of the machine shop; each machine is connected separately to the main shaft, usually by belt or chain, in such a way that the machine is driven at the required speed. In the other arrangement, each machine is driven separately by its own source of power. This source of power is usually an electric motor and, as an electric motor works most economically at a comparatively high speed, it is usually necessary to reduce this by some form of gearing before the power is applied to the machine shaft.

Toothed gearing is one of the methods used to transmit power from one point to another. Gearing can be used for all powers, from the smallest to the largest, from the mechanism of the wrist-watch to the propelling machinery of the 40,000-ton liner.

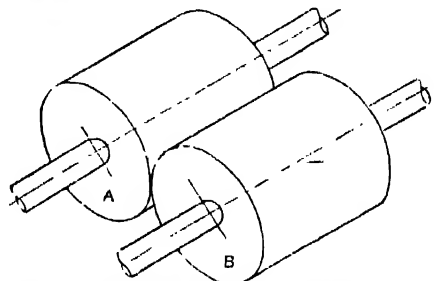


Fig. 50. TRANSMISSION. Showing the use of two cylinders in contact for transmission of small powers.

When the gear wheels operate correctly, the motion of the shafts is the same as if the wheels were replaced by cylinders touching each other, as in Fig. 50. The relative speeds of the shafts depend upon the diameters of the cylinders, e.g. if the diameter of A is twice that of B, then B will revolve twice as fast as A (i.e. the speed ratio is 2). Besides making the correct number of revolutions, depending upon the diameters of the cylinders, the shafts will move at corresponding rates throughout each revolution; thus if at one point in the revolution the driving shaft moves faster than before, the driven shaft will move correspondingly faster. It is possible to use cylinders in contact, as in Fig. 50, to transmit small powers, but slipping takes place when the frictional grip between the two surfaces is exceeded. The forces dealt with can be greatly increased by giving the cylinders "teeth," the projections above the surface of one cylinder fitting into recesses in the other.

Pinion and Gear Wheels

In order that the two shafts may move at corresponding speeds at all points in the revolution, the teeth on the surfaces of the cylinders must be of certain definite shapes. Fig. 51 shows two wheels in gear; the smaller is generally called a pinion, the larger is called the gear wheel. The dotted circles drawn through the teeth, and touching each other on the line joining the centres of the shafts, represent the diameters of the cylinders previously considered. These circles are called the pitch circles, and the imaginary cylinders are called the pitch cylinders. By the pitch of the teeth is understood the distance, measured along the pitch circle, from the centre of one tooth to the centre of the next tooth. The pitch is given by:

$$\frac{\text{circumference of pitch circle}}{\text{number of teeth}}$$

and this is the same for both wheels.

Gears for heavy duty are invariably made of steel, and are usually hardened and ground. The hardening process often causes a certain amount of distortion of the teeth, so that the grinding must be the final operation. Fig. 52 shows a pinion which has been machined and

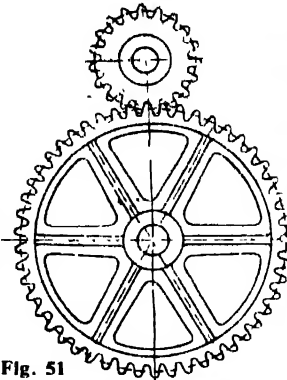


Fig. 51



Fig. 52

POWER TRANSMISSION. Fig. 51. Spur wheel and pinion. Fig. 52. A machined pinion which has been hardened and partly ground.

hardened, and partly ground. If no distortion had taken place the teeth would be cleaned all over at the first cut of the grinding wheel; the dark patches show where the grinding wheel has not touched the metal. Great accuracy in the shape of the teeth and in the finish of the surfaces is essential to minimise wear and noise.

Any number of gear wheels can be arranged in what is called a train to give any desired speed ratio. The numbers of teeth on the wheels are determined by the required speed ratio, while the size of the individual teeth is determined by considerations of strength, that is, by the power transmitted. Fig. 53 shows the pitch circles of two wheels in gear. If the action of one tooth on another is equivalent to the force P acting as shown, then the horsepower transmitted is

$$\text{H.P.} = \frac{\text{Work done per minute}}{33,000}$$

$$= \frac{\text{Force} \times \text{distance moved per minute}}{33,000}$$

$$= \frac{P \times 2\pi RN}{33,000} \quad \text{where } N \text{ is the speed in r.p.m. of the wheel of radius } R$$

Also,

$$\text{H.P.} = \frac{P \times 2\pi rn}{33,000} \quad \text{where } n \text{ is the speed in r.p.m. of the wheel of radius } r.$$

$$\text{The speed ratio } \frac{N}{n} = \frac{r}{R}$$

These relations form the basis for the calculations connected with toothed gearing, the teeth being of sufficient strength to carry the load P , and the wheels being of the correct relative sizes to give the required speed ratio.

When only two wheels are used to give a large speed ratio, one wheel will be very

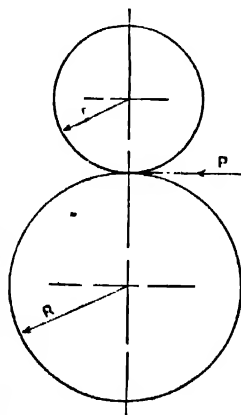


Fig. 53. Pitch circles of two wheels in gear.

large in relation to the other. It is sometimes convenient to use a number of smaller gears to give a more compact arrangement. Such a wheel train is shown in Fig. 54. Wheel 1 gears with wheel 2. Wheels 2 and 3 are fixed on the same shaft and revolve at the same speed. And wheel 3 drives wheel 4, which is fixed on the final shaft. If N represents speed, D the diameter of the wheel, and the suffixes 1, 2, 3, and 4 the various wheels, we have

$$\frac{N_2}{N_1} = \frac{D_1}{D_2} \quad \text{and} \quad \frac{N_4}{N_3} = \frac{D_3}{D_4}$$

$$\text{But } \frac{N_4}{N_1} = \frac{N_2}{N_1} \times \frac{N_4}{N_3} \quad (\text{because } N_2 = N_3)$$

$$\text{therefore } \frac{N_4}{N_1} = \frac{D_1}{D_2} \times \frac{D_3}{D_4}$$

For example, if the ratios $\frac{D_1}{D_2}$ and $\frac{D_3}{D_4}$ are each 4, the overall speed ratio will be 16

In the type of gearing so far considered, called spur gears, the successive pairs of teeth come into operation across the whole width at the same time. At high speeds very slight inaccuracies in the teeth and distortion under load may cause noise and vibration. This can be reduced by the use of helical teeth. Fig. 55 shows a pinion and wheel with double helical teeth as used for steam turbine speed reduction gears. With single helical gearing the forces between the teeth of the wheels cause an axial thrust along each shaft, and special bearings are required. With the double helical gearing shown, the thrust from one set of teeth is balanced by that from the other set.

Bevel Gearing

When the axes of the shafts are not parallel, but inclined to each other, as in Fig. 56, the gears are called bevel wheels. This illustration shows two shafts at right angles. The surfaces of the wheels are conical, not cylindrical.

Power can be transmitted

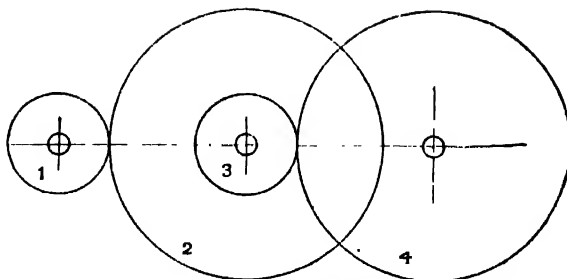


Fig. 54. GEAR TRAIN. An arrangement of gears to give a large speed reduction.

from one shaft to another by means of belts, ropes, or chains, and pulleys or chain-wheels mounted on the shafts. There is a great similarity between the action of belts and ropes, but there is an essential point of difference between the action of belts and ropes, on the one hand, and chains on the other. With the former, power is transmitted by the frictional grip of the belt or rope on a pulley. With chains, the drive is a positive one, similar to toothed gearing.

Belts are being displaced by individual drives to machines, but they are still used extensively

in factories and workshops. It is usual to arrange the machines so that they can all be driven from pulleys placed on one main driving shaft. So that any machine can be stopped without interfering with the others, the drive for each machine is taken through a countershaft, as shown in Fig. 57. The pulley on the main shaft is more than twice the width of the belt, and in the corresponding position on the countershaft are two pulleys—one, the fast pulley, keyed to the shaft, and the other, the loose pulley, free to rotate on the shaft. The belt can be moved from one pulley to the other by a forked lever (not shown in the diagram). When the belt is moved from the fast to the loose pulley, the countershaft comes to rest and the machine stops. The drive from the countershaft to the machine shaft is shown (in Fig. 37) as being taken through stepped pulleys, giving three different available speeds of the machine shaft

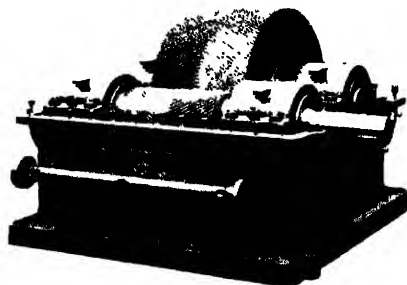


Fig. 55. HELICAL GEARING. Pinion and wheel with double helical gears, used for steam turbine reduction gears.

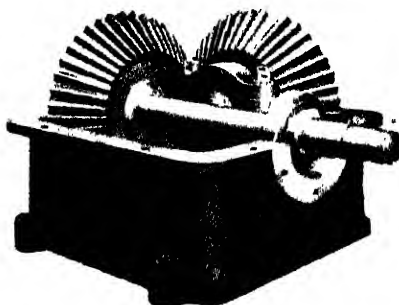


Fig. 56. BEVEL GEARING. Two shafts with conical gear wheel at right angles.

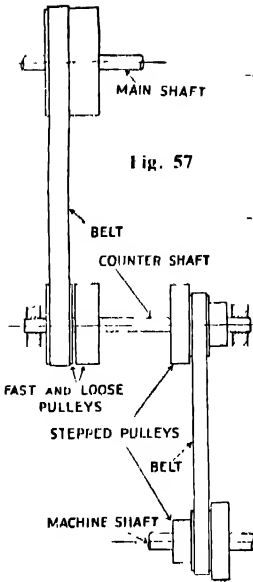


Fig. 57

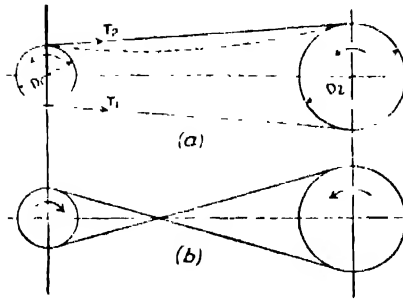


Fig. 58

BELT TRANSMISSION. Fig. 57. Belt drive taken through a counter shaft. Fig. 58. a, Open belt drive; b, crossed belt drive.

for a constant speed of the main shaft. The actual speed of the machine shaft depends upon the speed of the main shaft and the sizes of the various pulleys.

Fig. 58 (a) shows an open belt drive, and (b) a crossed belt drive. In both, the speed ratio is

$$\frac{N_1}{N_2} = \frac{D_2}{D_1}$$

The open belt is used when the shafts are required to run in the same direction; with a crossed belt, the shafts revolve in opposite directions.

Factors in Belt Drives

The size of belt to be used in any particular instance depends upon the following factors: the horse power transmitted, the sizes and speeds of the pulleys, the strength of the belt material, the frictional grip between the belt material and the pulley, and the angle on the pulley over which the belt and pulley are in contact. A further factor is the efficiency of the fastener joining the ends of the belting. In Fig. 58, if the larger pulley is the driver and revolves in the direction shown, then the tensile force T_1 , which is exerted by the lower side of the belt upon the smaller pulley, is greater than the force T_2 exerted by the upper side. The difference between these tensions ($T_1 - T_2$) is the effective force action at the rim of the pulley, and the h.p. transmitted is

$$\frac{(T_1 - T_2)}{33,000} \times 2\pi RN$$

where R is the radius in feet and N the corresponding speed in r.p.m. of either pulley.

The size of the belt must be such that it will safely withstand the load T_1 . To obtain the maximum driving effort with any belt, $T_1 - T_2$ must be a maximum; so that, for a given value of T_1 , T_2 must be a minimum. There is a definite relationship between T_1 and T_2 , depending upon the frictional qualities of the belting and pulley materials, and upon the angle of contact of the belt on the pulley. The greater the

frictional grip between belt and pulley, and the greater the angle of contact, the greater is the effective driving force.

In considering the angle of contact between belt and pulley, Fig. 58 shows that with an open belt this angle is least on the smaller pulley; thus the smaller pulley is the limiting factor in the drive. It will be seen that the angle of contact on the smaller pulley varies with the distance between the shafts, being increased when the pulleys are moved farther apart. Another factor affecting the angle of contact is the sag of the belt due to its weight. The sag is greater in the slack than in the tight side of the drive, so that the slack side should be on top, as shown dotted in Fig. 58 (a), thus increasing the angle of contact. With the crossed belt the angle of contact is much greater and the drive more efficient. If the load on the belt drive is increased until the frictional grip is exceeded, the belt will slip on the pulley.

Rope Drives

For high powers and long drives, ropes are used in preference to belts. The advantage of the rope drive is that it is lighter and cheaper for a given power than the corresponding belt drive. Fig. 59 shows a section through the rim of a pulley, with the rope in position in the V-shaped groove. The rope grips on the sides of the groove, not on the bottom, the frictional grip between the rope and the pulley being thus increased. Any required number of ropes can be used on the same pulley.

Instead of circular ropes, V-belts are sometimes used in the grooved pulley rims. In these, the belt is shaped to fit the inclined sides of the groove, and the frictional contact surface is much greater than in the case of the rope. The pull in the belt is better distributed and wear is not so rapid. The materials used can be subjected to heavier loads than is possible with

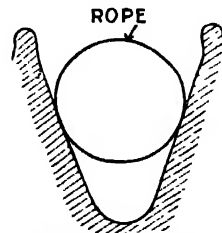


Fig. 59. Position of rope in groove of pulley.

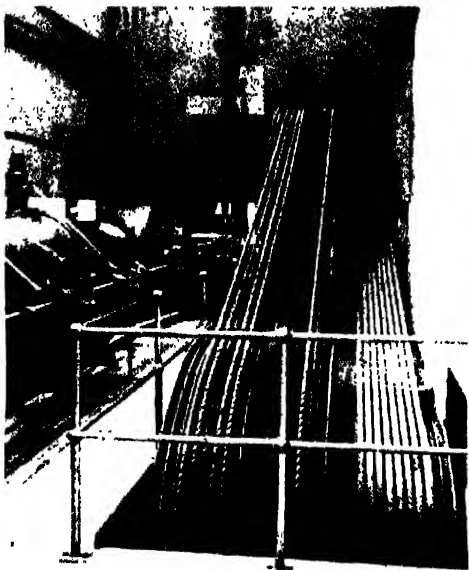


Fig. 60. ROPE DRIVE. Belt ropes running at 2,828 f.p.m. and transmitting 400 h.p.
James Dawson & Sons, Ltd

ropes, with the result that a smaller number of belts, and consequently smaller pulleys, can be used. Fig. 60 shows both ropes and V-belts used in conjunction in the same drive. The engine on the extreme left is driving the two main pulleys in the background. Power is transmitted through 13 ropes on the large pulleys and eight V-belts on the smaller pulleys.

Chain Drives

Chains are being used to an increasing extent in drives for which belts or toothed gearing were customary. The chain is akin to the gear-wheel in that the drive is a positive one, and the speed ratio between the driving and driven shafts is definite. Although the size of chain for a given power would be greater than that of the corresponding gear-wheel, it is less than for a belt drive. Chains are not generally used for very long drives, for which ropes are more suitable; but they are specially applicable for short drives, where the centres of the shafts are too far apart for gear-wheels to be used and too close together for a belt drive.

There are two main types of chain used for power transmission—the roller type, as used on the ordinary pedal cycle, and the inverted tooth type. An example of the latter is shown in Fig. 61. Here the links are composed of plates mounted on pins, and the teeth on the chain-wheels are so formed that the sloping sides of the plates come into position quietly and without shock. This type of chain is generally much

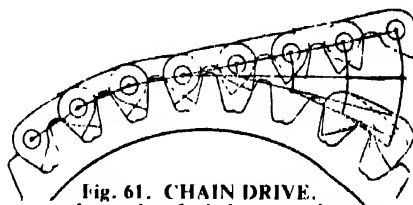


Fig. 61. CHAIN DRIVE.
Example of chain transmission whereby high speeds are obtained.

quieter in running than toothed gearing. For low speeds and heavy loads the roller type is more suitable, being lighter and cheaper for the same load.

Both types of chain are illustrated in Fig. 62, which shows an arrangement used to transmit 150 horse-power, at the same time reducing the speed. An inverted tooth chain is used for the main drive. The roller chain is used here as a coupling to connect the motor with the driving shaft. Each half-coupling is really a chain sprocket wheel, and the two chains are mounted on the same pins. The force transmitted through the coupling is distributed over all the

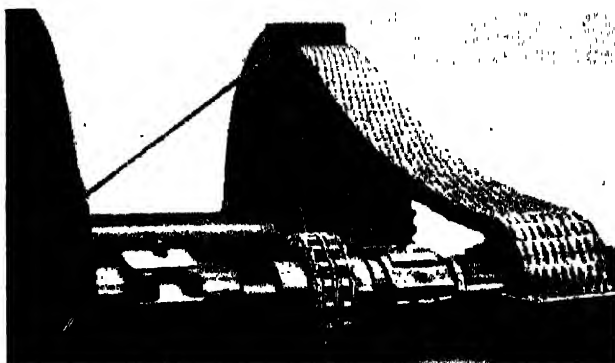


Fig. 62. TWO TYPES OF CHAIN TRANSMISSION.
Chain drive employing the inverted tooth chain and a simple chain coupling.

Courtesy of the Coventry Chain Co., Ltd.

pins, so that a small chain can be used. An additional advantage is the ease with which the coupling can be assembled.

LESSON 8

Clutches and Brakes

HAVING dealt with appliances used to transmit power from one revolving shaft to another, we can now deal with those pieces of mechanism which are used to bring machines into operation and to rest, viz. clutches and brakes. Although there are a large number of different examples of both, to suit the many different conditions of operation, the same principle is almost universally employed. When two surfaces which are moving at different speeds are brought into contact, the frictional effect between them alters the speed of one or both of the bodies until both are moving together.

In a clutch, a surface fixed on the revolving driving shaft is brought into contact with a corresponding surface fitted to the stationary driving shaft. Slipping occurs between the surfaces, and energy is dissipated in heat until both shafts revolve at the same speed. In a brake, a fixed surface pressed against a surface on the moving body loses its energy of motion in friction as it comes to rest.

Friction Clutch

Fig. 63 shows a friction clutch of the single-disk type, suitable for machine-tool applications. The main hubs A and B are keyed rigidly to their respective shafts, C and D, the keys being shown at E and F. Shaft C projects a short distance into hub B, to ensure that the two parts of the clutch remain in proper alignment. The clutch disk G is mounted on pins fixed in the outer casing, and is provided on each side with a renewable lining of a material having a high coefficient of friction. The centre disk is gripped on both sides by the disks H and J; these are shown in the disengaged position, where they are kept apart by springs, such as that at K.

The engaging lever is attached to the groove in the sliding collar L, and when the lever is moved to the "on" position the sliding collar is moved forward, depressing the curved end of the internal levers, one of which is shown at M. This lever is pivoted about the pin shown, and when the forward end is depressed, the rear end causes the outer sleeve, to which the disk

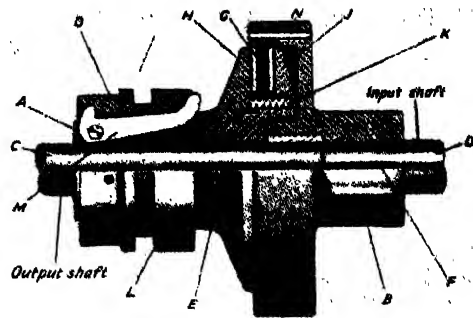


Fig. 63. FRICTION CLUTCH. Single-disk friction clutch, generally used for machine tools of all types. The lettering is explained in the text in this page.

Courtesy of Taylor Bros., Castleton

H is attached, to move forward. The central disk G is free to slide on the driving pins N, so that the movement of the outer sleeve causes the central disk to be gripped between the disks with equal force on each side. When the wear at the friction surfaces becomes appreciable, adjustment can be made by means of the screwed collar O. When the frictional surfaces are arranged in this manner, with equal forces on each side of the central disk, there is no unbalanced thrust in the direction of the shaft axis.

Centrifugal Clutch

Another clutch, used for an entirely different purpose, is shown in Fig. 64. This is an automatic centrifugal clutch, specially useful for machinery driven by electric motors. An electric motor requires more current while starting than during its normal running, and, as the maximum current is the deciding factor in the design, the motor should, if possible, be started before the load is applied. The clutch is shown incorporated with a belt drive, the cover plate being removed. The shaft of the motor is connected directly to the farther side of the central portion marked A in Fig. 64. The heavy blocks, marked B, are revolved by the radial arms on the driving portion, but are free to move outwards and

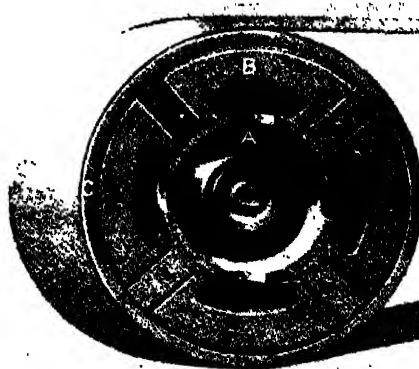


Fig. 64. CENTRIFUGAL CLUTCH. Example of an automatic centrifugal clutch generally adopted where an electric motor is used for driving.

Courtesy of Thos. Broudbent & Sons

press on the inner side of the pulley rim C. As the motor speed increases, the shoes B, which are provided with a friction lining, are thrown outwards and engage with the pulley rim with an increasing centrifugal force. The pulley increases in speed as the force exerted by the clutch shoes increases, until it runs at the same speed as the motor.

Friction type clutches are a safety device against an overload on the transmission. The frictional surfaces will slip if the normal applied force is exceeded, and slipping will continue until the load is reduced to its normal value, thus preventing damage to the mechanism. If the slipping is excessive, however, undue heating of the friction surfaces may result.

Band Brakes

There are two main types of brake: band, and block. A band brake consists of a flexible band, fitted with a renewable friction lining, wrapped around the circumference of the brake drum, as in Fig. 65. One end is connected to the end of a lever, to which the operating force can be applied, either directly by hand or foot, or through a system of levers. The other end is shown connected to a fixed part of the machine, but in some instances it can be connected to the operating lever.

When the wheel is revolving in the direction indicated by the arrow, and a force is applied to the operating lever, the wheel is gripped by the encircling band; the tensile force in the band is least at the lever end and greatest at

the fixed end. If the wheel was revolving in the opposite direction, the tension would be least at the fixed end and greatest at the lever end, so increasing the operating force.

The relationship between the tensions at the two ends of the brake band is the same as for

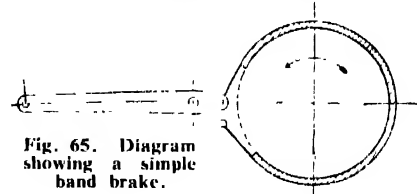


Fig. 65. Diagram showing a simple band brake.

a belt on a pulley, and it depends upon the frictional qualities of the materials in contact, and upon the angle of contact between brake band and drum. The effective braking force is the difference between the maximum and minimum tensions, and, in order to make this effective force as great as possible, the angle of contact is made as great as is practicable.

Block Brakes

A block brake consists of a solid block which is pressed against the moving surface. This type is commonly used on trains, trams, etc. The blocks are made of a material softer than the surface with which they come in contact, so that most of the wear will take place at the block. In some instances the blocks are fitted with

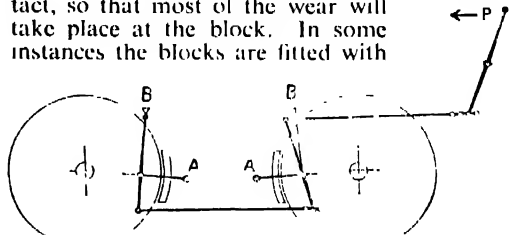


Fig. 66. Brake gear as used on a four-wheel bogie vehicle.

special fabric linings, as in the band brake, but for heavy work a soft cast iron shoe is generally used. The brake operating force is commonly applied through a system of levers.

Fig. 66 shows diagrammatically a suitable arrangement of levers for a four-wheel bogie such as is used at each end of a railway coach. Usually two brake blocks are on each wheel, but for simplicity only one is shown in the figure. The operating force P is transmitted through the levers to the centres, A, of the brake blocks, the brake shoes being thereby pulled against the wheel rims. The ends, B, of the swinging levers are fixed to the coach frame. A similar system of levers is operated by the same force P to act on the wheels of the other bogie.

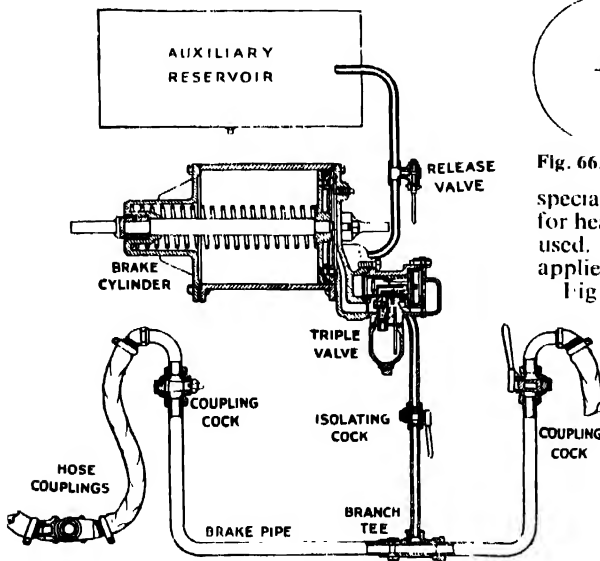


Fig. 67. WESTINGHOUSE BRAKE. Control mechanism of Westinghouse automatic brake applied to a railway vehicle.

Courtesy of Westinghouse Brake and Saxby Signal Co., Ltd.

The operating force P is supplied by compressed air acting on the piston of the brake cylinder shown in Fig. 67. The brake pipe is continuous throughout the length of the train, and it conveys compressed air from a main reservoir on the locomotive to the auxiliary reservoir on each carriage. The brakes are supplied on all the vehicles by reducing the pressure in the train pipe, purposely by the driver or guard, or by the rupture of a hose coupling if a carriage breaks away.

The reduction of pressure in the train pipe causes the automatic control valve (the triple valve) to move, and air flows from the auxiliary reservoir through the valve passages into the brake cylinder. The pressure of the in-flowing air forces the piston outwards and applies the brakes. The brakes are released by admitting

air from the main reservoir to the train pipe, increasing the pressure to its normal value. The control valve then moves back to its original position, opening the port from the brake cylinder to the atmosphere, so that the pressure in the brake cylinder is released and the piston is forced inwards by the spring, withdrawing the brake blocks from the wheels.

At the same time the control valve is in such a position that the auxiliary reservoir is immediately re-charged from the train pipe and is again ready for use. The supply of compressed air in the main reservoir is maintained by an air compressor with automatic control. To deal with vehicles of different weights and having different arrangements of operating gear, the operating force P is obtained by using brake cylinders of different sizes.

LESSON 9

Bearings and their Lubrication

BEARINGS are used to support revolving shafting at suitable points. The points of support and the type of bearing are governed by operating conditions, the most important of these being the nature of the load and the speed. By the nature of the load is meant whether it is distributed along the length of the shaft or concentrated at certain points, as by the mounting of gear wheels, belt pulleys, etc.: also whether it is steady, because of the weight of a solid mass, or fluctuating and perhaps reversing, as in an engine crankshaft. When one surface slides over another, as when a shaft revolves in a bearing, energy is lost in friction between the surfaces. This frictional loss must be reduced as much as possible, and to this end some method of lubrication is adopted.

The simplest type of bearing is a hole drilled in a solid piece of metal, as Fig. 68. This would be suitable only where the shaft is lightly loaded and the speed is low. There is no method of adjustment when wear takes place, and, further, the shaft could only be removed by being withdrawn through the hole, which would be very inconvenient if the shaft were fitted with couplings, wheels, or other projecting parts.

A bearing suitable for general purposes in all branches of

engineering is shown in Fig. 69. The body of the bearing is generally of cast iron, and is in two parts, A and B, the cap B being held in position by two studs C. The actual bearing, called the "brass" (though the material used is generally gun-metal), is also in two parts, D and E, the joint being on the horizontal centre line of shaft. Projections, F, on the top and bottom halves of the brass, fit into holes in the body and cap, and prevent rotation of the actual bearing. Lengthwise movement of the brass along the shaft is prevented by the flanges on the ends, shown in the right-hand view, Fig. 69. The central hole in the cap is connected to a supply of oil for lubrication, and as a rule

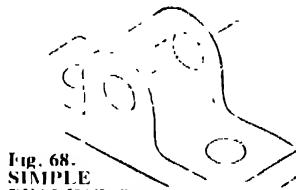


Fig. 68.
SIMPLE
BEARING. Type
suitable for light
loads and slow speeds.

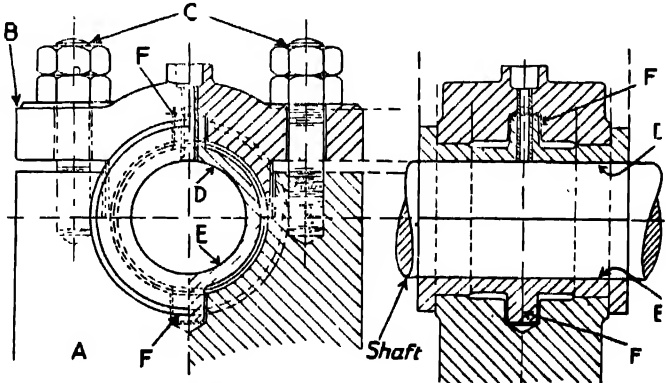


Fig. 69. DIVIDED BEARING. This form of bearing is commonly used in all branches of engineering.

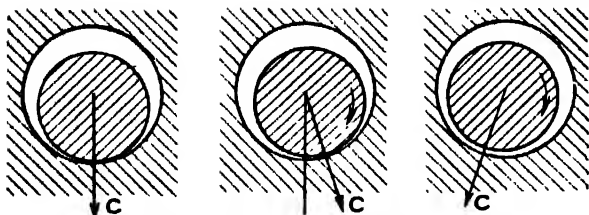


Fig. 70. Diagrams illustrating the behaviour of a rotating shaft in a bearing. The arrow C indicates the axis of the point of contact. From left to right : stationary shaft ; rotating shaft without lubrication ; rotating shaft with lubrication.

grooves are cut in the surface of the brass to distribute the oil evenly over the whole of the bearing surface.

When the brass becomes worn and loose, metal is removed from the joint between the two halves until it is again a good fit on the shaft. The shaft can be removed bodily from the bearing by lifting off the cap and the top half of the brass, without interfering with any fixtures or attachments on the shaft itself. It is desirable that most of the wear should take place in the bearing, because a new brass can be fitted much more cheaply than a new shaft. The bearing is therefore made of a softer material, which at the same time offers little frictional resistance to the motion of the shaft. The material commonly used for bearings is gun-metal, an alloy of copper and tin. For larger bearings, white metal is best. White metal is an alloy containing about 85 per cent. tin, 10 per cent. antimony, 5 per cent. copper. It is not strong enough to be used alone, so it is fitted as a lining to a stronger material, such as gun-metal or steel.

Lubrication

The frictional resistance offered to movement of one metallic surface over another can be reduced by the use of a fluid between the two surfaces. Compressed air and water are used in special instances, but in most bearings the fluid is lubricating oil. Lubrication maintains between the surfaces a thin film of liquid, which supports the shaft and prevents metallic contact. To appreciate what happens under these conditions, consider a shaft in a bearing as shown in

Fig. 70. The shaft is rotating clockwise and the load is vertically downwards. From left to right the diagrams show : position the shaft will take in the bearing when it is not rotating ; the shaft rotating but with no lubricant ; attitude of the shaft when rotating with correct oil film lubrication. The formation of the film depends upon a sufficient quantity of lubricant being carried around by the shaft—that is, it depends upon the speed. For a given load on the shaft, film lubrication will not be obtained until a certain speed has been reached, and during

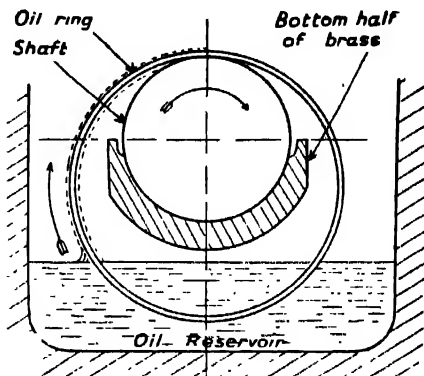
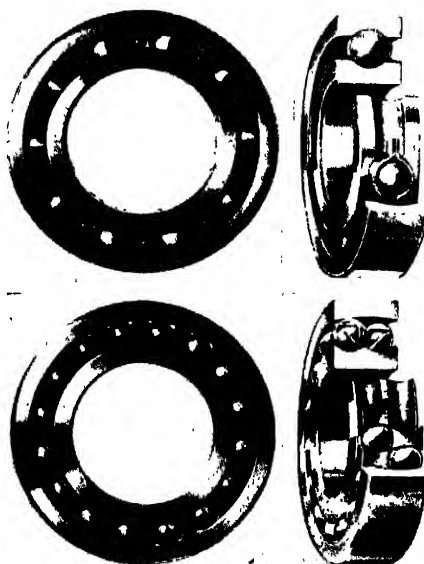


Fig. 71. OIL RESERVOIR. Details of an oil reservoir for lubrication of smaller bearings.



BALL BEARINGS. Fig. 72, upper : a single-row ball bearing. Fig. 73, lower : a double-row self-aligning bearing.

this period metallic contact, with consequent wear, takes place in the bearing. Further, a heavier load on the shaft requires a higher speed for the formation of the film.

In practice, two methods are used to maintain the oil film, and to dispose of the heat generated in the oil in its passage through the bearing. For large bearings, such as for steam turbine shafts, the oil is supplied under pressure, and after passing through the bearing it is pumped through an oil cooler, where the heat is given up to cooling water and the temperature reduced before the oil is returned to the bearing. For smaller bearings, such as those used for line shafting, it is usual to provide an oil reservoir

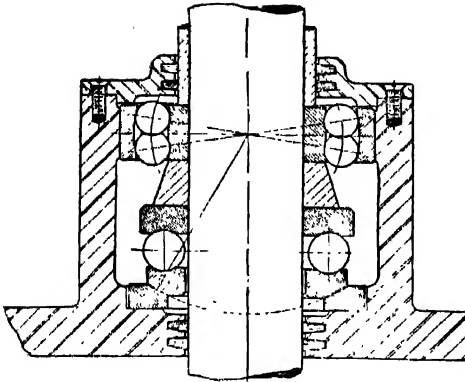


Fig. 74. MOUNTING OF A THRUST BEARING. The bearings are mounted on the shaft with two felt washers to keep them clean and watertight.

Courtesy SKF Ball Bearing Co., Ltd

in the body of each bearing, as in Fig. 71. The ring resting on the top of the shaft dips into the oil, thus providing a continuous supply as the shaft revolves. The oil returns to the reservoir after passing through the bearing. This is a very simple and very efficient method of operation, and it is easily incorporated in the type of bearing shown in Fig. 69.

Ball Bearings

Ball bearings are replacing plain bearings in many instances. The sliding contact of the plain bearing is replaced by rolling contact, the frictional loss being much less. There is no lubrication problem with the ball bearing, because the action is similar to that of a wheel rolling along a flat surface.

The construction of one type of ball bearing is shown in Fig. 72. The inner ball race is fixed on the shaft, while the outer race is secured in the machine frame. Spherical balls roll in the grooves prepared in the races, and transmit the load from the moving shaft to the fixed frame. The cage shown between the races distributes the balls equally around the bearing.

Fig. 73 shows a double-row, self-aligning ball bearing. The outer race is spherical, and it can be inclined slightly to the inner race without affecting the action of the bearing. This type is useful where shaft and machine may be slightly out of alignment.

The purpose of a ball-thrust bearing is to carry an axial thrust in a shaft, e.g. in a vertical shaft the weight must be supported. The method of mounting such a thrust bearing is illustrated in Fig. 74, which shows a journal bearing of the self-aligning type used in conjunction with a spherically seated thrust bearing. With this arrangement the shaft may be slightly out of alignment with the machine frame without concentrating the load on one or two balls. Fig. 74 shows also how the bearings are mounted on the shaft and in the housing, two felt washers at each end keeping the bearings clean and watertight.

Roller Bearings

The roller bearing is used where the loads are heavier than can be carried by a ball bearing. Each roller makes contact along a line, whereas the ball makes contact only at a point. Fig. 75 shows a roller bearing opened up; here the rollers can be used in direct contact with the shaft. The joint in the outer race is made as shown, and not in one straight line, in order to minimise any shock which may occur when the roller is passing from one half to the other. The bearing can be fitted to a shaft just like a plain bearing, without removing any attachments on the shaft. Here the inner race has been dispensed with, and the rollers make contact with the surface of the shaft. The rollers are formed by twisting a piece of flat steel into a helical shape. These distribute the load more effectively where long rollers are concerned. Short rollers are made solid.

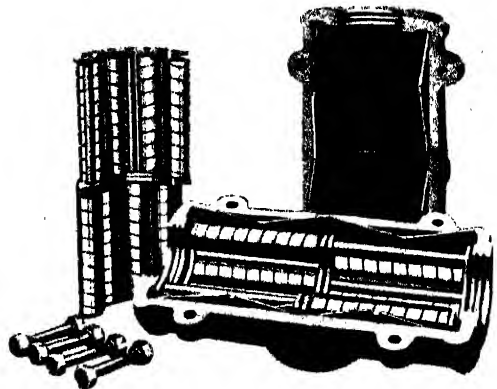


Fig. 75. SPLIT SHAFT ROLLER BEARINGS. This type of bearing can be fitted or removed without taking down pulleys, collars, clutches, or other shaft fittings.

Courtesy Delco Remy & Hyatt, Ltd.

LESSON 10

General Principles of Heat Engines

HERE we are concerned with engines that convert heat energy to mechanical energy. There are several forms of heat engine, including the steam engine in which the heat is liberated in the furnace to generate steam in a boiler which in turn drives the reciprocating or turbine engine; the internal combustion engine in which the heat release actually takes place within the cylinder of the engine; and the gas turbine, which is a form of internal combustion engine.

In every heat engine a working substance passes through a cycle of operations which are repeated over and over again. Heat is imparted to the substance in one part of the cycle and rejected from the substance at a later stage. Between these two stages the working substance expands and does work, converting to mechanical energy the difference between the heat supplied and that rejected. All improvements in the cycle of operations aim at increasing the proportion of the heat supplied which is converted to work. It will be seen that the heat supplied is a measure of the fuel supplied and hence of the cost of the fuel. This fraction of the heat supply turned into work, or the ratio

$$\frac{\text{heat converted to work}}{\text{heat supplied}}$$

is called the thermal efficiency

The fraction of the heat supplied to an engine which is converted to work is relatively small. It is of the order of 38 per cent. in the best oil engines, and 28 per cent. in the largest steam

turbines. In the steam locomotive, efficiency often falls to some 7 or 8 per cent. In the turbine, the exhaust steam is passed to a condenser, where it is cooled and reconverted to water. The result is that a low pressure is produced in the condenser, actually well below atmospheric pressure. This accounts to a large extent for the efficiency of the turbine being greater than that of the locomotive, which exhausts to the atmosphere. And the locomotive's boiler and condenser commonly occupy more space than the turbine.

Pressure, Volume, and Temperature

The working substances used are two of the commonest in nature, viz. water and air. Water and its vapour, steam, are used in the steam engine. Air forms the main portion of the working substance in the internal combustion engine and gas turbine.

A perfect gas can be considered as a substance capable of unlimited expansion or compression while still in the gaseous state, under all temperatures. No known gas conforms exactly to this condition, although some approach it more nearly than others. If any gas is cooled down, a temperature will eventually be reached at which the gas condenses to a liquid, and, if cooled still further, the liquid solidifies. Thus a substance can exist in the form of solid, liquid, or gas, depending upon the temperatures at which these changes occur. A vapour is a gas near the point of liquefaction, an intermediate stage between gas and liquid.

The important characteristics of a gas are its pressure, volume, and temperature. When a volume of gas is heated in a closed vessel, its temperature and pressure increase. If the gas is contained in a vessel in which the pressure can be kept constant, as by the use of a loaded piston in a cylinder, then the addition of heat will cause an increase in both temperature and volume. In the latter case, work is done as the gas expands in the cylinder, so that part of the heat supplied to the gas goes to raise the temperature of the gas (i.e. it is stored in a gas as heat energy) and the remainder is converted to mechanical energy and does useful work in moving the piston.

Expansion Curve

In an engine cylinder the working substance is supplied at a high temperature. As the piston is forced outwards, the increase in volume is accompanied by a fall in pressure and temperature. The work done in moving the piston represents the conversion of part of the heat

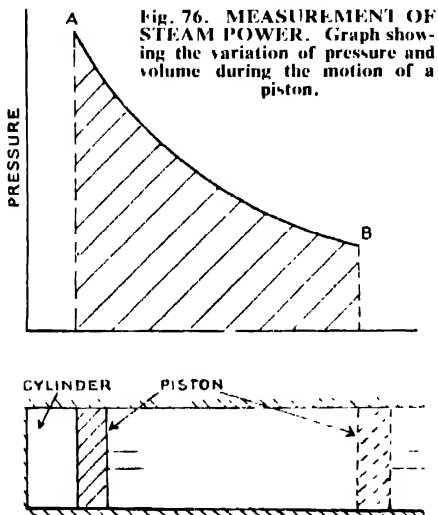


Fig. 76. MEASUREMENT OF STEAM POWER. Graph showing the variation of pressure and volume during the motion of a piston.

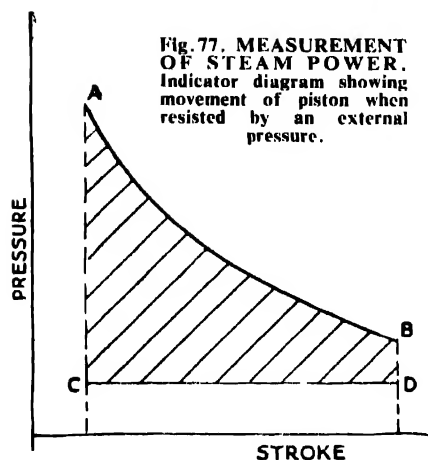


Fig. 77. MEASUREMENT OF STEAM POWER. Indicator diagram showing movement of piston when resisted by an external pressure.

energy in the gas to mechanical energy. In Fig. 76 the curve *AB* shows how the pressure and volume may vary during the motion of the piston from the position shown in full lines to that shown dotted. The work done during the expansion is

$$\text{average pressure} \times \text{area} \times \text{distance moved.}$$

The pressure varies during the expansion, and the most convenient method of determining the work done is by measurement of the shaded area under the expansion curve. If the movement of the piston is resisted by an external pressure, as at *CD*, Fig. 77, then the effective pressure at any point in the stroke is given by the vertical distance between the two lines *AB* and *CD* at that point. The useful work done is given by the shaded area enclosed between the lines showing the pressures on both sides of the piston.

Engine Indicator

Diagrams such as Fig. 77, called indicator diagrams, are obtained from engines and the areas measured in order to determine the power developed in the cylinder. The instrument used is called an engine indicator, and the principle of its operation is, briefly, as follows. One side of a small piston is in communication with the engine cylinder, while the other side presses against a spring.

Variations in pressure inside the cylinder cause corresponding movements of the spring outside, and these movements are transmitted and magnified by a series of light links, causing a pencil to move up and down on a sheet of paper. At the same time the paper itself is moved in a direction perpendicular to the pencil movement, and its motion is

proportional to that of the piston, that is, it registers changes in volume inside the cylinder. The pencil traces out a closed diagram representing the variations in pressure and volume inside the cylinder during a cycle of operations. The area of the diagram represents, to scale, the work done in a cycle. Given the number of cycles, the power developed in the cylinder can be calculated.

Simple Steam Plant

Fig. 78 is a diagrammatic arrangement of a simple steam plant, the sequence of events being as follows. Fuel is burnt in the furnace of the boiler *A*. The flames and hot gases pass through the boiler tubes, giving up heat to the water and converting it to steam. When most of the heat has been extracted from the products of combustion they are discharged to the atmosphere. The steam generated in the boiler passes to the engine *B*, where it does work in the cylinder as it falls in pressure and temperature. The steam then enters the condenser *C*, where it gives up heat to the cooling water and is condensed to water. The condensate is extracted by the pump *D*, and delivered to the feed tank *E*. The boiler feed pump *F* draws from this tank and delivers to the boiler, thus completing the cycle of operations. The same feed water can be used continuously, only a small fresh supply being required to make up for losses.

Reciprocating Steam Engine

The action of the reciprocating steam engine is shown in Fig. 79. The piston *A* is forced backwards and forwards in the cylinder *B* by the action of the steam, which is admitted first to one side of the piston and then to the other. The reciprocating motion of the piston is converted to rotary motion at the crankshaft by means of the connecting rod *C* and the crank *D*. The cross-head *E* is fixed to the end of the

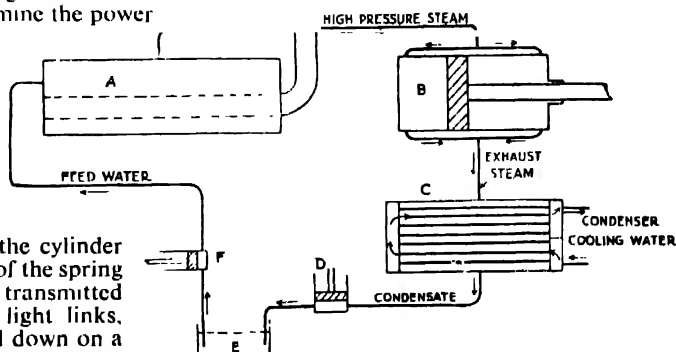


Fig. 78. STEAM PLANT. Diagram illustrating the sequence of events in the working of a simple steam plant.

piston rod. One end of the connecting rod is pivoted at the cross-head, and the other is pivoted at the end of the crank. The cross-head moves straight along the guide F, while the crank revolves about the axis of crankshaft, which is supported in the main bearings G, secured to the bed-plate of the engine.

Fig. 80 is a section through the cylinder and valve chest of a steam engine, showing the slide valve which controls the flow of the steam to and from the cylinder. This valve is moved to and fro over the steam and exhaust passages, operated through the valve rod by an eccentric on the crankshaft. Both the valve rod and the piston rod pass through stuffing boxes to prevent the escape of steam to the atmosphere. The stuffing box contains some suitable material, such as asbestos, or metallic rings, kept in position by an adjustable gland. Leakage of steam from one side of the piston to the other is prevented by the rings fitted in the piston; these spring out and press against the cylinder wall.

The steam from the boiler is admitted to the steam chest, on the outside of the slide valve, and it enters the cylinder through one of the steam passages when this is uncovered by the movement of the valve. The recessed portion inside the valve puts the other steam passage into communication with the central exhaust passage, so that, when high pressure steam is flowing into the cylinder at one end, the steam at the other side of the piston, used during the previous stroke, is being pushed out through the valve and into the exhaust pipe.

Fig. 81 shows four different positions of the valve, and the corresponding positions of the piston. In A the valve is moving from left to right, and is just about to admit steam to the left-hand side of the piston. The right-hand steam passage is already in communication with the exhaust port, so that the piston can push

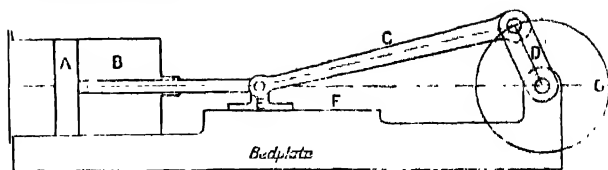


Fig. 79. STEAM ENGINE THEORY. Action of piston in reciprocating engine.

out the exhaust steam as it moves to the right. In B the valve has fully uncovered the steam port and has reached the end of its travel; the piston has moved only a short distance in its outward stroke.

The valve now begins to move from right to left, and at C the steam passage to the left-hand side of the piston is again covered; this is called the point of cut-off. The piston continues to move outwards owing to the expansive action of the steam, the pressure falling as the volume increases. At D the valve has moved farther to the left and has

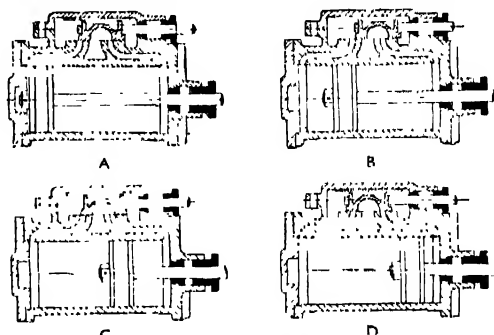


Fig. 81. STEAM VALVE ACTION. A simple valve shown in various positions of stroke; A, valve admitting steam; B, valve full open for steam; C, valve closed for steam; D, valve closed for exhaust.

covered the right-hand steam passage, thus preventing further outflow of the exhaust steam. The steam thus trapped on the right-hand side of the piston is compressed as the piston moves to the end of the stroke, and acts as a cushion, helping to bring the fast-moving piston to rest without shock.

Just before the end of the stroke, the continued movement of the valve towards the left opens the left-hand side to exhaust, and then the right-hand side is opened to the high pressure steam. The piston then moves from right to left, and the same events occur as have been described for the previous stroke. In this way the valve admits steam to the front and back of the piston alternately, and automatically opens the other side of the piston to exhaust, so giving continuous motion of the crankshaft.

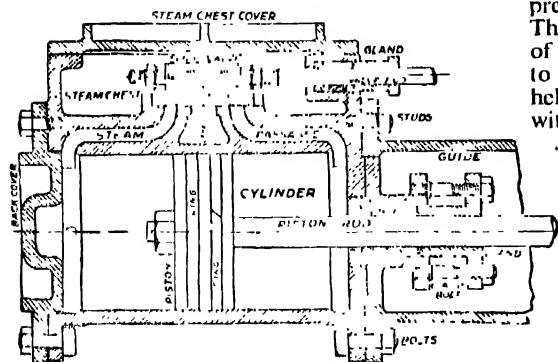


Fig. 80. CYLINDER AND VALVE CHEST. Section showing piston rod and steam control slide valve.

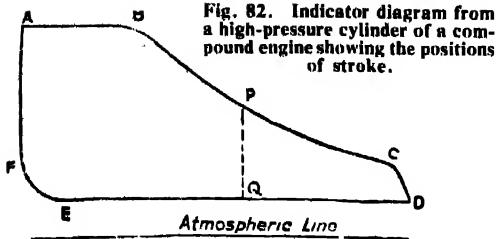


Fig. 82. Indicator diagram from a high-pressure cylinder of a compound engine showing the positions of stroke.

A graph of pressure in the cylinder plotted against the volume of steam is called the indicator diagram (as mentioned earlier in this Lesson). Fig. 82 is a typical diagram from the high pressure cylinder of a compound engine. When the piston is at the end of its stroke (left-hand side of diagram), the slide valve admits high pressure steam and the pressure rises to A. The pressure in the cylinder remains constant from A until the cut-off point B. The steam in the cylinder then expands, the pressure and volume changing as in the curve BC. At C, near the end of the stroke, the valve begins to open to exhaust, and the steam is released, the pressure falling to that in the exhaust port, as shown by CD. The piston then moves backwards, under the action of the steam on the other side, and pushes the exhaust steam out of the cylinder, the pressure remaining

constant, DE. Near the end of the exhaust stroke, at E, the exhaust valve closes, and the steam then contained in the cylinder is compressed along the line EF. A fresh supply of steam is then admitted and the cycle is repeated.

The moment of a force F about a point A is equal to $F \times r$, where r is the perpendicular distance from A to the line of action of the force. In Fig. 83, F is the force on the connecting rod, due to the steam pressure acting on the piston. As previously explained, the steam pressure varies during the stroke. It will be seen from Fig. 83, in which a second position of the mechanism is shown by dotted lines, that the distance r also varies during the stroke, being zero at the ends and greatest near the mid-point. Apart from the variations in the

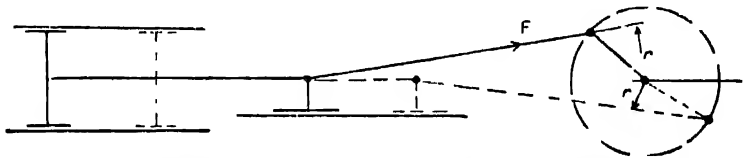


Fig. 83. CRANKSHAFT MOMENT. Illustrating the turning moment on a crankshaft, details of which are described on this page.

turning moment due to variations in F and r , the inertia forces called into play by the moving masses exert a further influence. During the early part of each stroke, part of the work done by the steam is used to increase the velocity of the moving parts, decreasing the energy available at the shaft. Towards the end of the stroke the energy of the moving

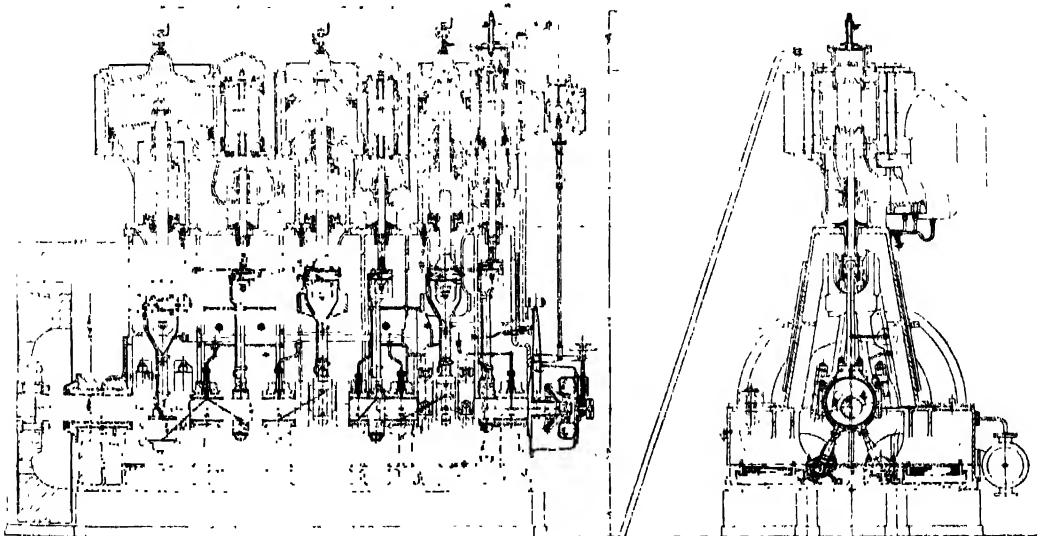


Fig. 84. MULTIPLE EXPANSION ENGINE. Left, cross section of a self-lubricating triple expansion engine with high, intermediate, and low pressure cylinders. Right, end section view of the same engine.

parts becomes available to help the rotation of the shaft, as the parts come to rest. The result of all these variables is that the turning moment from the cylinder of a steam engine varies greatly, and a method has to be adopted to damp out the effect of these variations.

Multiple Expansion Engine

For most purposes a uniform turning moment is required from an engine, and speed variations can be kept within desired limits by fitting a suitable flywheel. Excess energy at one point in the stroke is used in speeding up the mass of the flywheel. For a given variation of torque, the heavier the flywheel the smaller is the increase in speed. The energy stored up by the increased speed of the flywheel is

given out when the energy from the cylinder is less than that required, while the speed falls slightly.

Most steam engines, except the smallest, have more than one cylinder. The expansion of the steam is divided up into two or more sections, each in a separate cylinder. Triple expansion is often used, the steam passing through the high pressure, intermediate pressure, and low pressure cylinders, these being of such dimensions that approximately the same amount of work is done in each, Fig. 84. An advantage of the multiple expansion engine is that, by suitably arranging the relative positions of the various cranks, variations in the turning moment can be smoothed out, and a comparatively light flywheel can be used.

LESSON 11

Construction and Principles of the Steam Turbine

ALTHOUGH the earliest recorded steam engine, dated about 2,000 years ago, was a turbine in principle, the first application of steam power utilised the reciprocating engine. Now the turbine, because of its higher efficiency, low maintenance, smooth operation, and compact installation, has generally displaced the reciprocating engine, with the notable exception of the steam locomotive.

A steam turbine is a form of heat engine in which two distinct changes of energy take place. The available heat energy in the steam

is first converted into kinetic energy by expansion of the steam through passages or nozzles from which it issues as a jet. A portion of this kinetic energy is converted into mechanical energy by (1) the jet being directed at an angle against curved blades mounted on a revolving disk or cylinder, or (2) by the reaction of the jet itself if the expanding channel can revolve.

Rotary Motion

The force on the blades, causing rotary motion, is purely dynamical and is due solely to the change in momentum of the steam during its passage past the blades. A simple analogy will assist the student to understand this principle. When a man stands holding a fire hose in action he is conscious of a force, the reaction, tending to push him backwards; it is normal for two firemen to handle one nozzle for this reason. If the person holding the nozzle were standing on a wheeled truck or on ice he would be propelled backwards by the reaction. In the impulse turbine the steam expands in the fixed nozzles to exhaust pressure, its velocity increasing during expansion. The resulting kinetic energy is converted into mechanical energy during the passage of the steam across the blades. Fig. 85 shows a De Laval turbine, a simple, single-stage impulse turbine. The velocity of the steam leaving a nozzle depends upon the drop in pressure through the nozzle. If the pressure drop is large, then the velocity is high. For economical operation, the turbine rotor should run at a correspondingly high speed.

In the De Laval turbine the steam is expanded through the complete pressure range in one

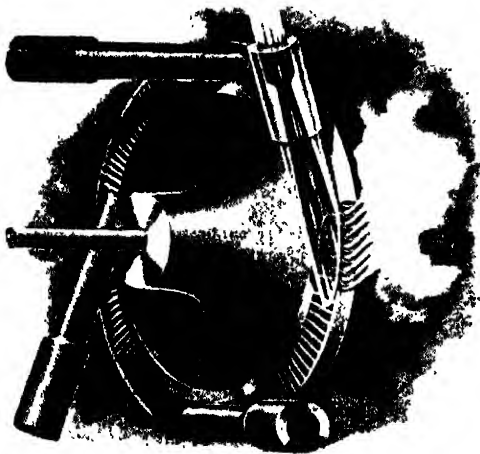


Fig. 85. DE LAVAL TURBINE. This single-stage impulse steam turbine.
Courtesy the De Laval Steam Turbine Co.

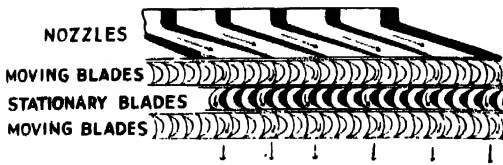


Fig. 86. STEAM TURBINE PRINCIPLE.
Diagrammatic view of the passage of steam from nozzles through moving and stationary blades of a Curtiss steam turbine.

stage, and the velocity of the steam is so high that the turbine speed is of the order of 30,000 revolutions per minute. This is much too high for most purposes, and in practice the expansion of the steam is usually divided up into a number of stages. The diagram, Fig. 86, shows a single stage consisting of a row of nozzles, two rows of moving blades, and one row of fixed blades.

Velocity Compounding

The steam leaves the nozzles with a high velocity, due to the pressure drop in the nozzles, and impinges on the first row of moving blades. The steam leaving the moving blades flows over the row of blades fixed in the casing, and its direction is changed so that it impinges at the correct angle upon the second row of moving blades; the steam then enters another row of nozzles leading to the next stage in the turbine. This is called velocity compounding.

As the steam pressure falls continuously from the inlet end to the exhaust end, in its passage through the various stages, the volume of steam increases, and an increasing area of flow must be provided. This is done by increasing the blade height at each fall in pressure, as in Fig. 87, which shows a complete rotor assembled and ready to be placed in position in the casing. Each row of blades is mounted on a separate disk, except the left-hand stage at the high pressure end, and has two rows of moving blades. One method of securing the blades in the rim of the disk is shown in Fig. 87.

The nozzles through which the steam expands at each stage are mounted in diaphragms fixed in the casing as illustrated in Fig. 88, which is a view of one-half of the casing for the rotor of Fig. 87. Each diaphragm fits tightly on

the shaft at the centre, so that no steam can pass from one side to the other except through the nozzles arranged to impinge upon the moving blades. Fig. 89 shows the same turbine with the rotor in position in the casing; the condenser is seen on the left. The steam enters the turbine at the right-hand side at the top; the increase in the blade height to allow for the increase in volume at reduced pressure is shown. Also, the wheels carrying the moving blades can be distinguished from the diaphragms containing the nozzles. The condenser in this instance is bolted directly to the low pressure end of the turbine; the small circles indicate the boundaries of nests of tubes through which cooling water flows, extracting heat from the condensing steam.

Reaction Turbines

In the reaction turbine there are no fixed nozzles of the type shown in the impulse machine Fig. 85, but a series of rings of blades. These blades are all of the same curved section, alternate rings being right-handed in the casing or fixed portion of the turbine, those in the rotating part of the machine being left-handed. In a sense, therefore, each ring of blades acts as a set of nozzles, for there is a pressure drop at each ring, fixed or moving, with a corresponding increase in the relative speed of the steam.

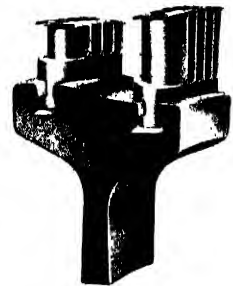
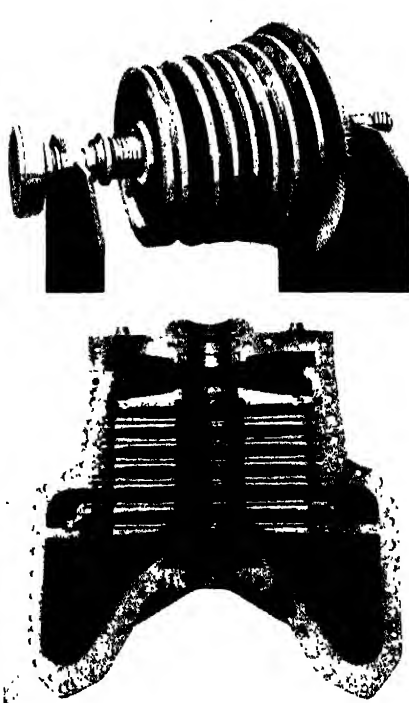


Fig. 87. STEAM TURBINE. Above, left: Complete turbine rotor assembled ready for fitting. Above, right: One method of securing blades in rotor disk.

Fig. 88. TURBINE CYLINDER TYPE. Left: Half of a cylinder showing half diaphragms in position. This shows one-half of the casing for the rotor in Fig. 87.

Courtesy of Metropolitan Vickers Electrical Co., Ltd

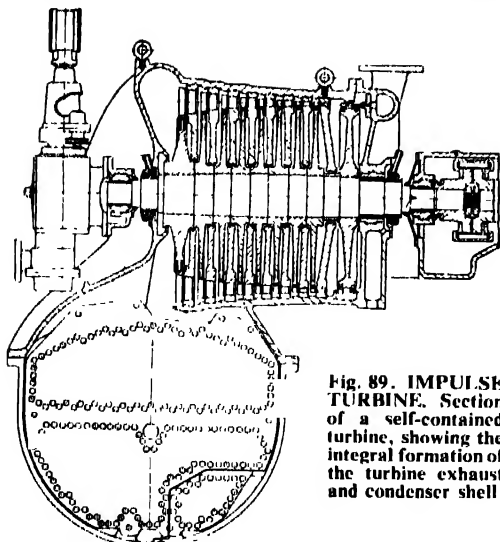


Fig. 89. IMPULSE TURBINE. Section of a self-contained turbine, showing the integral formation of the turbine exhaust and condenser shell

In the impulse type of turbine, previously described, work is done by the impulsive action of a jet of steam on the turbine blades. In the *reaction* type turbine, now being considered, the moving blades are themselves shaped and arranged to act as nozzles. The momentum of the steam jet leaving each blade reacts on the blade, helping to drive it around. A row of fixed blades is arranged after each row of moving blades; these blades also act as nozzles and direct the steam on to the next row of

moving blades. The blades are so formed that the velocity of the steam increases as it flows from one set of blades to another, i.e. from fixed blades to moving blades. This imparts a reaction thrust to the moving blades. As far as the fixed blades are concerned, the turbine acts on the impulse principle, so that it is really a combination of impulse and reaction.

One of the disadvantages of the steam turbine is that it is not reversible in direction. For some purposes, such as driving an electric generator, reversibility is not required, but for other purposes, such as ship propulsion, reversibility is essential. In the latter case special arrangements have to be made. For small

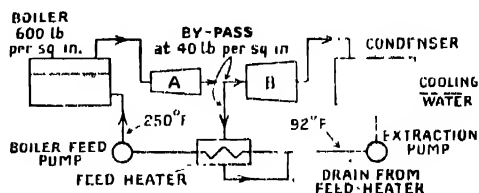


Fig. 90. Diagrammatic arrangement in a turbine plant with feed-heater.

powers a reversing gear can be inserted in the driven shaft, while the turbine always revolves in the same direction. For large powers such an arrangement would be too cumbersome and costly, and marine turbines are usually built with a separate part of the rotor arranged for reversing, the nozzles and blades in this portion being reversed in direction.

A development in the steam turbine, aimed at the improvement of thermal efficiency, is shown in Fig. 90. In the simple circuit of Fig. 78

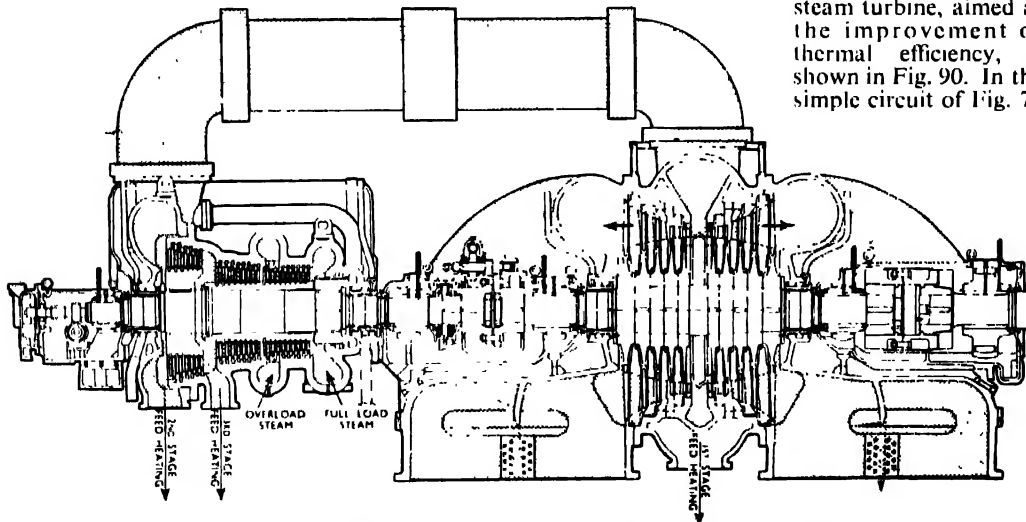


Fig. 91 TURBINE. Sectional diagram of a 30,000 kW turbine arranged for three stages of feed heating. Steam passages dotted. Speed 3,000 r.p.m. For details see text in p. 2441.
From Proceedings of Inst of Mechanical Engineers, Feb. 1940, by permission

condensed steam was drawn from the condenser by the pump D and fed by a second pump F directly to the boiler. A turbine is built in two or more sections, A and B of Fig. 90, and steam is tapped off between them to supply a feed-heater. Here, the relatively cold water from the extraction pump is heated to the temperature of the steam between A and B, that is from say 90° F. to 250° F., before being fed to the boiler. The work lost by bypassing some steam to the feed-heater so that it does not do any work in section B of the turbine is more than balanced by the reduction in heat required at the higher temperature. This arrangement can be regarded as common to nearly all present-day turbo-alternators for large electricity works.

A section of a turbine arranged for three stages of feed heating is shown in Fig. 91. Special difficulties arise in the design of high-speed machines of large output. The volume of steam is here so great at the exhaust end of the machine that the flow has been split into two halves, as shown by the horizontal arrows in the upper part of the casing. This arrangement keeps down the maximum stresses in the rotating parts. The large pipe seen over the top of the turbine, leading from the high to the low pressure section, is provided with a flexible joint, midway along. This can act like a bellows or concertina, thus allowing for variation in length caused by heating or cooling during the working. Flexible couplings are arranged between the two sections of the turbine and between the right-hand end and the alternator



Fig. 92. TURBO-ALTERNATOR. A 105,000 kW Metropolitan-Vickers turbo-alternator set at Battersea power station, London.

From "Turbine Lubrication," C. C. Wakefield & Co., Ltd

(not shown) which it drives. This allows for slight out-of-alignment of the various units of the machine.

LESSON 12

Principles and Construction of Steam Boilers

WHEN water is heated, its temperature rises until boiling point is reached. The temperature then remains constant while evaporation takes place, that is, while the water is being converted into steam. If the vessel in which the water is contained is open to the atmosphere, as in the ordinary domestic kettle, the temperature at which the water boils is 100 deg. C., or 212 deg. F., and this temperature is maintained until the water is all boiled away. If the water is contained in a closed vessel, and is under pressure, the temperature at which the water evaporates is no longer 100 deg. C., but dependent upon the pressure. At a pressure of 100 lb./sq. in., for example, the temperature is about 164 deg. C., and at 200 lb./sq. in. it is 194 deg. C. This is called the saturation temperature, and steam at this temperature is called saturated steam.

When water is heated in a closed vessel under

a definite pressure, a certain amount of heat, depending upon the pressure, is required to raise the temperature to the saturation temperature. This heat is called the liquid heat, being the heat given to the water in its liquid state. After the saturation temperature has been reached, more heat is required to convert the water to steam while the temperature remains constant; this heat is called the latent heat of steam. When all the water has been evaporated, and more heat is added, the temperature of the steam rises again, and the steam is then said to be superheated. A generator converts water to superheated steam at a comparatively high pressure, and the most important part of the generator is the boiler.

Three essential parts of the ordinary boiler are the furnace, in which the fuel is burnt and heat generated; the heating surface, through which the heat of combustion passes to the

water ; and a vessel to contain the steam generated. There are many different types of boiler, for different conditions of operation, but these three parts are always present. In order that a boiler can operate at maximum efficiency, two important requirements have to be fulfilled. These are (1) the maximum amount of heat must be generated from the fuel ; and (2) the maximum amount of this heat must be transferred to the water. The first is a furnace problem and requires the complete combustion of the fuel. The second is a heating surface problem and requires that the temperature of the products of combustion, that is, the waste gases, shall be reduced as low as possible before being discharged to the atmosphere.

The combustible part of the fuel consists mainly of carbon and hydrogen, and heat is generated during combustion, i.e. the combination of these elements with the oxygen of the air. If the proportions of carbon and hydrogen in the fuel are known, the quantity of air required for the complete combustion of the fuel can be determined. In practice, for complete combustion a certain amount of air must be supplied in excess of that theoretically required. But this excess must be reduced to the minimum, because air not usefully employed carries away heat on leaving the boiler.

Boiler Operation

The heat is generated at a much higher temperature than the water. Heat flows through the heating surface, and the temperature of the products of combustion falls during the passage of the hot gases from the furnace to the boiler exit. By increasing the boiler heating surface, more heat can be taken from the gases, but a limit is fixed by the saturation temperature corresponding to the particular pressure. This is the temperature inside the steam and water space, and no more heat can flow through the heating surface when the products of combustion have been reduced to this temperature. With the high pressures of to-day, the quantity of heat contained in the flue gas at the saturation temperature is quite large. This heat can be usefully employed in heating the feed water before it enters the boiler, and in some instances for heating the air used for the combustion of the fuel. The feed water is

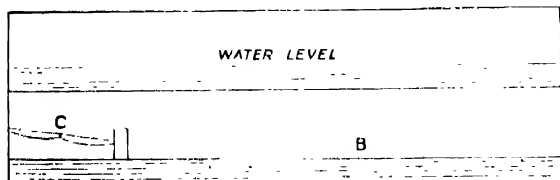


Fig. 93. STEAM GENERATION. Details of the Lancashire type of boiler used for small installations.

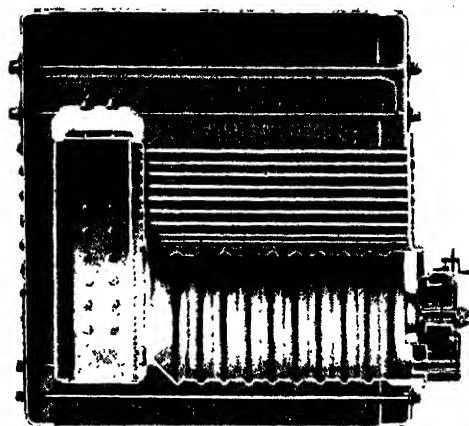


Fig. 94. OIL-FIRED BOILER. Sectional illustration of a return-tube marine boiler.
Thornycroft & Co., Ltd., Southampton

heated by passing it through an economiser, a series of tubes around which flows the flue gas leaving the boiler.

The size of a boiler depends upon the quantity of steam required, the passage of the necessary heat from gases to water determining the area of heating surface. The quantity of fuel also depends upon the steam generated and, for a given rate of combustion in the furnace, this fixes the size of grate required. The rate of combustion can be increased by supplying the air at a high temperature, and by increasing the rate at which the air is supplied. Three methods are adopted to ensure the flow of air to the fuel on the grate, viz. natural, forced, and induced draught.

Natural draught is the draught produced by a chimney. The column of hot gas is less dense than the surrounding atmosphere, and therefore tends to rise and draw in a fresh supply at the front of the boiler. The draught depends upon the height of the chimney and upon the temperature of the flue gas. Though sufficient for small plants, the rate of combustion with this method is not high enough when large quantities are dealt with. With forced draught the air for combustion is forced into the furnace by a fan, and the rate at which it is supplied can be varied. Induced draught is similar to forced draught in that a fan provides the draught, but the fan is so placed in the flue that the air is drawn, not forced, through the furnace.

The Lancashire boiler shown diagrammatically in Fig. 93 is used for small installations. It consists of a cylindrical steel shell A, with two internal

cylindrical flues B extending the whole length. If solid fuel is used, it is burnt on the grate C. The products of combustion pass right along the flue to the rear of the boiler, and then along brickwork passages in contact with the outside of the shell, and they are finally discharged into the chimney. The water level in the boiler is maintained above the tops of the internal flues, otherwise the intense heat would burn the material. Because of its relative cheapness and ease of operation this Lancashire type is the commonest boiler in small works.

Marine Boilers

A sectional view of a marine boiler is shown in Fig. 94. Considerations of space on board ship require that this boiler should be larger in diameter and shorter in length than the Lancashire type, which it resembles in general characteristics. In the boiler shown, there are two furnaces for burning oil fuel; sometimes there are three furnaces, sometimes four. The products of combustion pass from the furnace into the chamber at the back, and thence through the tubes leading to the front of the boiler. The ends of these tubes open into a smoke-box fitted to the front of the boiler, and leading to the funnel. The furnaces, combustion chambers, and tubes are all covered with water, so that heat is being transferred from the hot gases to the water during the whole of the passage through the boiler.

Water-tube Boilers

The Lancashire and marine type boilers described were developed for conditions less exacting than those in present-day power generation. In the earlier boilers the products of combustion passed through tubes surrounded by water. In the water-tube boiler of to-day

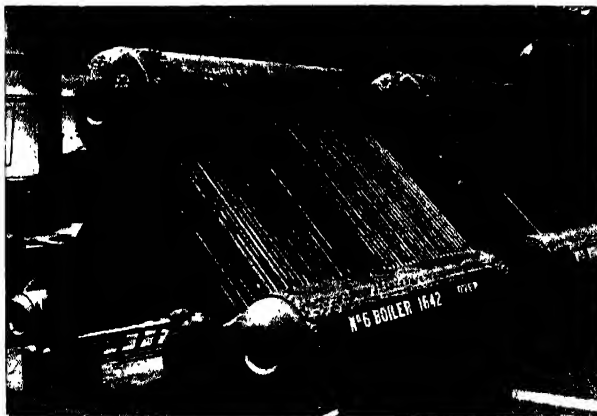


Fig. 96. MARINE BOILER. Water-tube boiler with nests of sloping tubes and water and steam drums. Built by Yarrow & Co.
Courtesy of "Engineering"

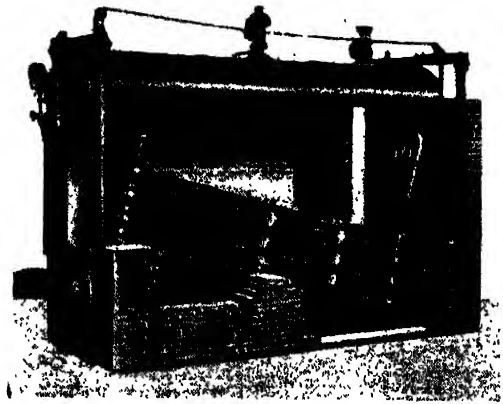


Fig. 95. SIMPLE BOILER. A simple water-tube boiler, with part of the brickwork removed to show details of the construction.
Courtesy of Babcock & Wilcox, Ltd

the water is circulated through the tubes, which are disposed so as to absorb as much as possible of the heat in the gases. A boiler of this type is shown in Fig. 95, with part of the brickwork removed to reveal the construction. The boiler is arranged to burn coal, fired by hand. The fire-door is shown open, at the left of the illustration. The grate is just below the front half of the nest of sloping tubes. The flames and hot gases pass upward across these tubes, then down and up again across the same tubes, directed by brick baffles built in between the tubes, and, finally, away to the chimney. The sloping tubes are connected at front and rear to the steam and water drum on top. The steam stop valve, through which the steam is withdrawn from the boiler, is on the top of the steam drum. A safety valve is fitted to the drum to allow steam to blow off when pressure exceeds a certain pre-determined value. A pressure gauge and a water-level gauge are on the front of the drum. The quantity of water in the system is comparatively small, so that the process of getting up steam takes much less time than with the shell type boilers already described. And as the diameters of the drums are small, the boilers can be built to withstand very high working pressures.

Superheated Steam

In present-day engines the steam is invariably superheated—i.e. heated above the saturation temperature corresponding to the particular boiler pressure. The steam is taken from the steam drum and passed through a series of tubes in the path of the hot gases, and it then goes to the engine.

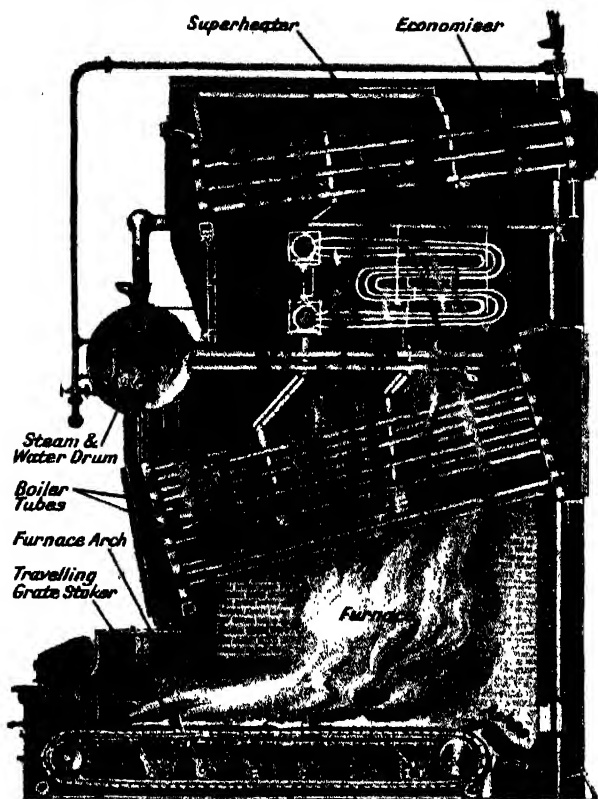


Fig. 97. STEAM BOILER. A water-tube boiler in section, showing general construction, and the travelling grate mechanical stoker. The latter is an endless chain driven by gearing at the front of the boiler. Superheater and economiser are indicated.

Courtesy of Babcock & Wilcox, Ltd

Steam does not conduct heat away from the metal of the tubes as readily as does water, so that the tubes of the superheater tend to become much hotter than those of the boiler.

For this reason the superheater is usually placed just after the first products of combustion pass across the boiler tubes (as in Fig. 97). The superheater is thus shielded from the highest furnace temperature, and yet the gases are hot enough to raise the temperature of the steam as required.

Mechanical Stoker

Present-day water-tube boiler construction is illustrated in Figs. 97 and 98. Coal is spread on the travelling-grate mechanical stoker, which is an endless chain driven by gearing at the front of the boiler (Fig. 97). The depth of coal on the grate and the rate at which it is carried towards the back of the furnace are arranged so that enough heat is generated to evaporate the required quantity of steam: combustion is

complete when the coal reaches the back of the grate.

The fire-brick furnace arch projecting from the front of the boiler over the grate assists in rapid and efficient combustion. The arch becomes white hot, and by radiating intense heat on the entering coal promotes rapid combustion. The brickwork baffles directing the flow of the products of combustion are shown. The gases first flow over the upper end of the sloping tubes, and then over the superheater placed above these tubes. There are two more passes over the boiler tubes before the gases pass up to the economiser, over which there are three passes. The feed water is pumped first into the economiser, where it takes heat from the flue gases, and it rises in temperature before entering the steam and water drum arranged along the front of the boiler. The water flows to the lower ends of the boiler tubes and rises up these inclined tubes as it becomes heated and is converted to steam, the steam being discharged back into the main drum. The pipe leading from the top of the drum conveys the steam to the superheater, through which it flows while its temperature is further raised. The steam is then ready for use in the engine.

Pulverised Coal

Pulverised coal is now extensively used by large power stations. The coal is ground to a powder before being blown into the furnace, where it is mixed with air for combustion. A typical installation is shown in Fig. 98. The coal is delivered to the raw coal bunker from a belt conveyer. From the bottom of the bunker the coal passes through a drier before it enters the pulveriser, where it is ground to the required degree of fineness. A fan draws a stream of air through the pulveriser, and the fine coal is carried in suspension and delivered into the cyclone separator, where it falls into the ready-for-use bin, while the air returns to the pulveriser for a fresh consignment of coal. A feeder at the bottom of the pulverised coal bin is supplied with enough air to carry the coal dust into the boiler. Combustion is rapid. The flue gases pass over the boiler tubes, then over the economiser tubes, before entering the induced draught fan for discharge to the chimney. The furnace temperature is very high, and, in the boiler shown, water tubes are arranged around the furnace walls to prevent the firebrick lining from melting.

The combustion of oil in a boiler is very similar to that of pulverised coal. The preheated oil is forced into the furnace through a burner which atomises it into a fine spray. This oil spray becomes intimately mixed with the air supplied through ducts, and combustion takes place rapidly. The same furnace can be arranged to burn either pulverised coal or oil.

Advantages of Oil

Advantages of oil over coal are, briefly: oil does not deteriorate in storage; it has a higher heating value than the same bulk of coal; it is more easily handled and stored; there is neither dust nor ash; ease of control over the combustion, the small quantity of excess air making for high efficiency.

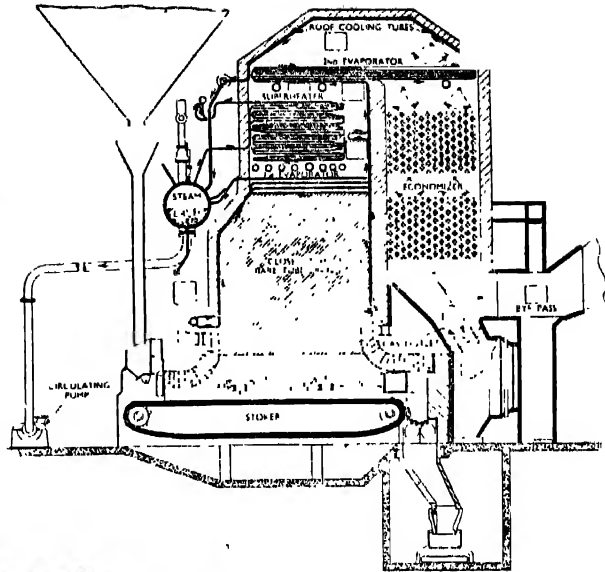


Fig. 99. **FORCED CIRCULATION.** Boiler of La Mont type with pump circulation, using either chain-grate stoker or powdered fuel.

From *Proceedings of the Inst. of Mechanical Engineers*, by permission; and John Thompson & Co. Ltd. Wolverhampton

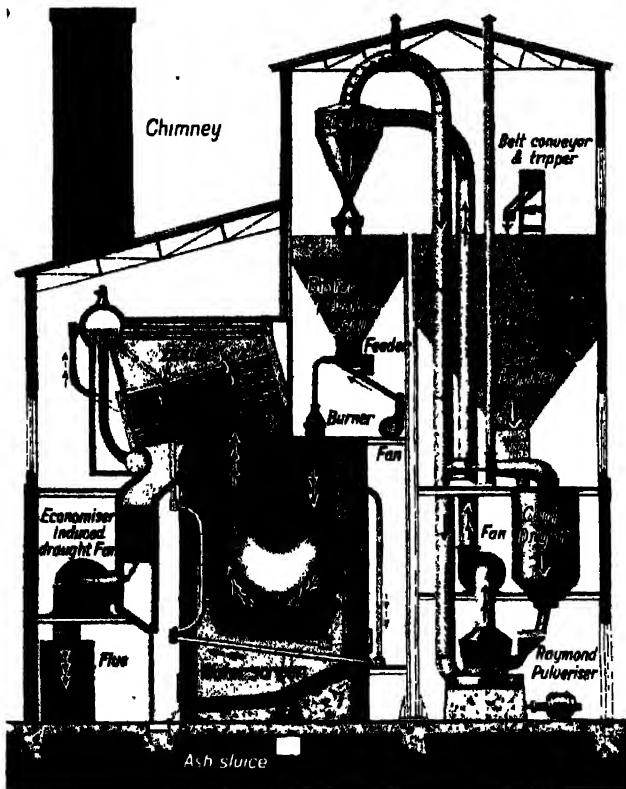


Fig. 98. **STEAM BOILER.** Diagrammatic section of a boiler installation using pulverised coal. The pulverising apparatus is on the right of the illustration.
Courtesy of Internal Combustion Ltd.

A disadvantage of oil is (sometimes) its high cost in comparison with coal.

A recent development is the forced circulation boiler, Fig. 99. There is a large combustion chamber with water-tube protection for the brickwork. Circulation is positive, for it is produced by a pump which forces water from the steam drum through the tubes and back to the drum.

Through Nests of Tubes

The hot gases from the combustion chamber pass in turn through nests of tubes called the first evaporator, superheater, second evaporator, and economiser. The main water supply is pumped through the economiser in the usual way on its journey to the steam drum. Although heat has been released from the hot furnace gases to these various groups of tubes, the gases are still hot at the exit from the economiser. This heat is used in an air preheater to supply hot air to the furnace in the pulverised coal boiler.

LESSON 13

Principles of Internal Combustion Engines

THE steam engine is an *external* combustion engine, the fuel being burnt in a furnace external to the engine. In the *internal* combustion engine the working fluid is air and gaseous fuel. Heat is generated by the combustion of the fuel with the oxygen in the air; the temperature of the air is thereby raised, and it expands, doing work on the piston as the temperature falls. The greater the temperature range the greater is the amount of heat converted to work, and the more efficient is the engine. After expansion down to a low pressure and temperature, the products of combustion are discharged to the atmosphere, and a fresh charge of air is drawn into the cylinder and the cycle is repeated.

In engines working on the four-stroke cycle the operations are in the sequence indicated in Fig. 100, as follows:

(1) *Suction* The piston moves outwards, the inlet valve being open, and a fresh charge is drawn into the cylinder. The pressure during this stroke is approximately atmospheric, and it is shown by line 1 in the indicator diagram Fig. 101.

(2) *Compression* The crank returns and forces the piston inwards, all valves being closed. The mixture in the cylinder is compressed into the clearance space, and pressure rises as shown by line 2, Fig. 101.

At the end of the compression stroke combustion takes place, and the heat generated raises the pressure, as shown by the vertical line. The time at which combustion begins and the rate of combustion are arranged so that the pressure can reach its maximum value before the piston has moved an appreciable distance outwards on the expansion stroke.

(3) *Expansion*. In this stroke the high-pressure products of combustion force the piston outwards, doing work on the crankshaft, while the pressure falls as shown by the curve 3, Fig. 101.

(4) *Exhaust*. At the end of the expansion stroke the crank returns, forcing the piston inwards, and the waste products of combustion are discharged to the atmosphere. The pressure which is attained in the course of this stroke is just slightly above the pressure of the atmosphere, as shown by line 4.

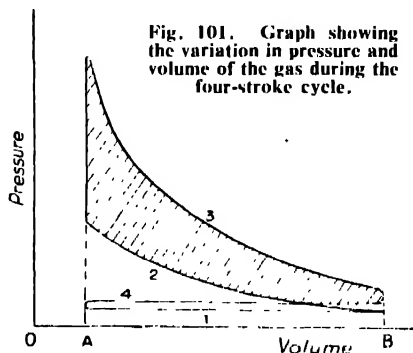


Fig. 101. Graph showing the variation in pressure and volume of the gas during the four-stroke cycle.

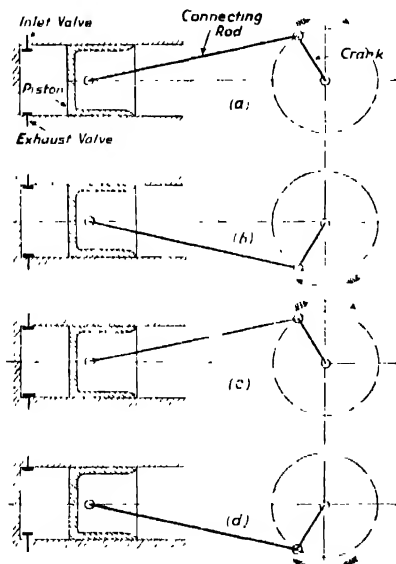


Fig. 100. CYCLE OF OPERATIONS. Simple diagrams illustrating the four-stroke cycle in an internal combustion engine.

The complete cycle of operations occupies two revolutions of the crankshaft. During this period there is only one stroke, the expansion stroke, in which useful work is done on the crankshaft. During the other three strokes the energy required to drive the piston backwards and forwards must be supplied from the engine flywheel. The fluctuation of energy during a cycle is much greater than with a steam engine, which, having a working stroke in each direction, gives four working strokes in two revolutions, as compared with one working stroke from the internal combustion engine. In order to avoid large fluctuations in speed between successive working strokes, a large flywheel is provided for single-cylinder engines. The size of the flywheel can be reduced by using a number of cylinders and suitably arranging the cranks. In a four-cylinder engine, for example, the four working strokes are equally distributed over two revolutions, that is, the cranks are set 180 degrees apart. The inlet and exhaust valves, by which the charge enters and leaves the cylinder, are operated by cams, through the medium of

rods and levers. As each valve opens once in two revolutions, the camshaft makes one revolution while the crankshaft makes two, gearing being used to give this speed reduction.

Two-stroke Cycle

The two-stroke cycle, which is a modification of the four-stroke cycle, gives a working stroke from each cylinder for each revolution of the crankshaft. This increases the power available from a given size of engine, and gives a much more uniform turning moment on the crankshaft, reducing the size of flywheel required,

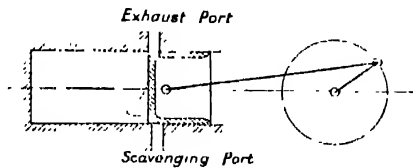


Fig. 102. TWO-STROKE ENGINE. Diagram of a cylinder of an internal combustion engine worked on a two-stroke cycle.

and perhaps eliminating it altogether. The compression, combustion, and expansion take place as in the four-stroke cycle, but the inlet and exhaust processes do not occupy full strokes of the piston. Near the end of the expansion stroke the piston uncovers a port in the wall of the cylinder, as shown in Fig. 102, and most of the waste gases flow out through this exhaust port while the pressure falls to that of the atmosphere. Just after the exhaust port has been uncovered, the further outward movement of the piston opens the inlet or scavenging port. The charge for the next cycle, already compressed to a pressure slightly higher than that inside the cylinder, enters by the scavenging port and drives out the remainder of the products of combustion from the previous cycle. As the piston moves inwards again, first the inlet port is covered and then the exhaust port, and during the remainder of the stroke the charge is compressed ready for combustion.

Advantages of the two-stroke cycle are: (1) a more uniform turning moment, due to having a working stroke in each revolution from each cylinder; (2) elimination of the mechanical complication attending the operation of the inlet and exhaust valves of the four-stroke cycle. But the scavenging process presents some practical difficulties. The time available for the process is very short. The entering charge must flow in such a direction that it forces all the waste products into the exhaust port. The returning piston should cover the exhaust port when all the waste gases have been expelled, but before any of the fresh charge is lost in the same way. And the supply of scavenging air necessitates the

provision of some form of compressor or blower. Shaped inlet and exhaust passages, and projections on the face of the piston, as shown dotted in Fig. 102, are used to direct the incoming charge for scavenging.

In Fig. 101 the shaded area represents the work done during the cycle. The area can be increased by increasing the ratio of the volume before compression to the volume after compression. This is called the compression ratio of the engine, and referring to Fig. 101 it equals

$$\frac{OB}{OA}$$

Generally, the higher the compression ratio, the greater is the amount of power that can be obtained from a cylinder of a given size, and the higher is the efficiency of the engine. But there is a limit to the increase in efficiency that can be obtained in this way, for as the ratio is increased there occurs a phenomenon called pre-ignition, and it is this that produces the "pinking" or "knocking" in automobile engines. This can be avoided to some extent by special additives to the fuel, the commonest being tetra-ethyl lead. In the diesel or heavy oil engine, described later in this Lesson, higher compression ratios can be used, and for this reason the efficiency of these engines is normally greater than that of petrol or gas engines.

Preparation of the Combustible Mixture

The cycle of operations through which the working fluid passes differs in different types of engine. It is dependent largely on the methods used in the preparation of the combustible mixture. In both petrol and gas engines the combustible charge is prepared outside the engine cylinder. Apart from the methods used for the preparation of the charge, the modes of operation are similar. In fact, the petrol engine was a development of the gas engine, modified to use liquid instead of gaseous fuel. In the gas engine the gas is supplied either from the gas main or from a gas-producing plant. The mixing of the air and gas is generally performed by a valve so arranged that the gases are mixed in the correct proportions before they enter the cylinder during the suction stroke.

The Carburettor

In the case of a liquid fuel such as petrol, which vaporises readily at ordinary temperatures, the liquid is allowed to evaporate and mix with the air stream as it is drawn into the engine by the suction of the piston. To facilitate the vaporisation of the petrol and its admixture with the air, it is sprayed through a fine jet into the induction pipe, through which it is carried as a fine mist by the air into the cylinders. The apparatus used for atomising the fuel and mixing it with air is called a carburettor.

In the type of carburettor commonly used on petrol engines, the petrol is supplied from a small chamber in which the height of the liquid is kept constant relative to the jet. When the crankshaft is revolved, air is drawn through the induction pipe by the suction of the pistons. The air flow is arranged so that there is a reduction of pressure at the jet, and the pressure difference thus set up forces the petrol through the jet in a fine spray. When the engine is turning over slowly, as at starting and when idling, the speed of the air in the induction pipe is correspondingly reduced, and special arrangements are necessary for the production of a satisfactory spray.

Ignition

Near the end of the compression stroke, when the charge has been raised to a high pressure and temperature, a spark is produced electrically in the mixture, and combustion follows. The rate at which combustion proceeds depends upon the extent to which the charge has been compressed, and upon the proportions of air and fuel in the charge. The mixture may be too weak (too much air) or too strong (too much fuel); in either case the rate of combustion is reduced, and the time during which burning takes place is increased. Even with the correct mixture, time elapses between the passage of the spark and the attainment of maximum pressure due to the combustion. Ignition is, therefore, arranged to take place shortly before the end of the compression stroke, so that the maximum pressure is reached before the piston has moved an appreciable distance on the expansion stroke. The spark is produced by an electrical discharge across an air-gap in the cylinder. The high voltage required to break down the resistance of the air-gap is obtained by the use of an induction coil.

Cylinder Cooling

The intense heat of combustion would raise the metal of the piston and

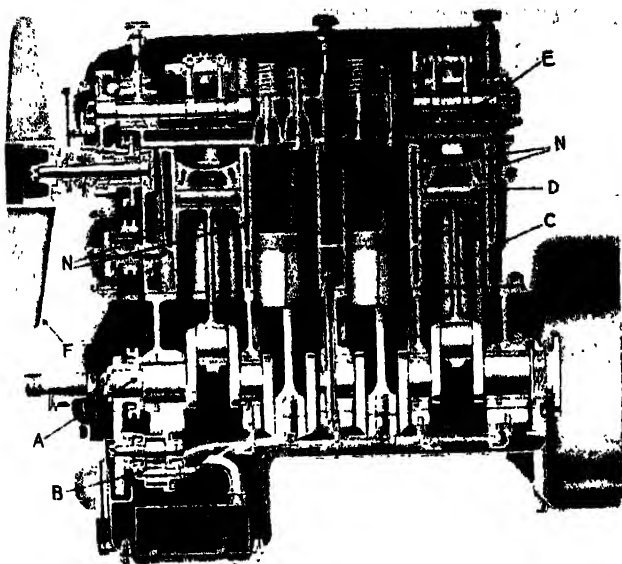


Fig. 103. FOUR-CYLINDER PETROL ENGINE. Cross-section of a four-cylinder engine as used for some buses and lorries, showing the arrangement of pistons, crankshaft, and other parts.

cylinder to a very high temperature unless some method of cooling were provided. In practice, there are two alternative cooling agents, namely, air and water. Air cooling is used only for small engines where there is a plentiful supply of cold air, e.g. motor-cycles. Metal fins on the cylinder surface increase the area in contact with air, and assist in dispersing heat.

With water cooling, a jacket is fitted around the cylinder, providing a space through which the water flows, carrying away heat from the cylinder walls. The temperature of the water rises in its passage through the engine, and if the same cooling water is to be used continuously it must be cooled before it again enters the cylinder jacket. Hence the radiator on the motor-car, and cooling tanks for stationary engines. —

Petrol Engine Construction

Fig. 103 is a four-cylinder petrol engine as used for buses and lorries. The illustration is arranged to display as much

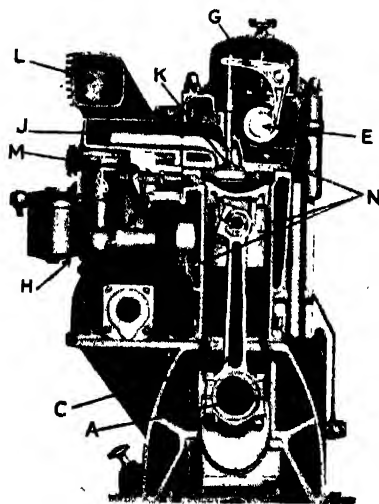


Fig. 104. End section view of the four-cylinder petrol engine shown at the top of the page. For lettering see text, p. 2459

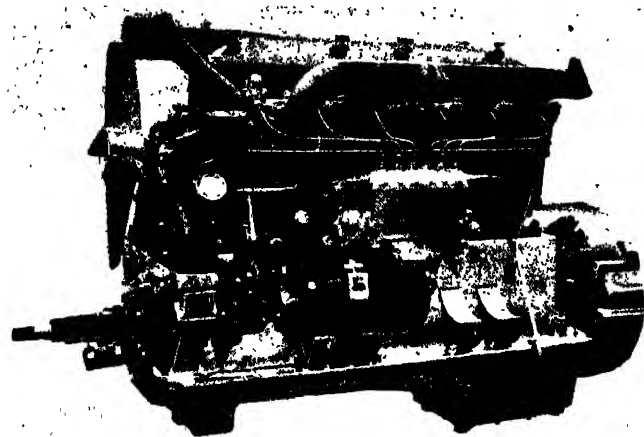
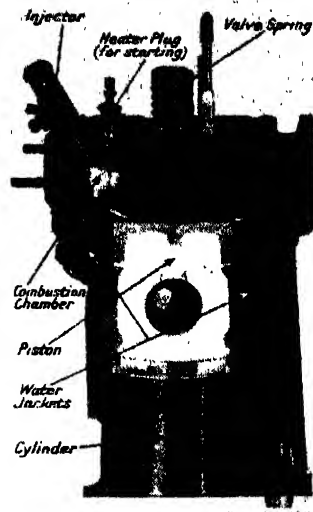


Fig. 105. OIL INJECTION. Six-cylinder heavy oil or compression ignition engine fitted with A.E.C. Ricardo head (in section on right). Fuel is injected by means of pumps seen in the centre of the cylinder block by pipes leading to six injectors at the cylinder heads.



as possible in one view, the overhead camshaft E being broken to show the valves K for two of the cylinders. In the other two cylinders the pistons and connecting rods are seen in section. The crankshaft A is supported in five bearings, supplied with oil under pressure from the oil pump B. Each piston has four rings, fitting in grooves in the piston and pressing against the cylinder to reduce gas leakage. In contrast with the steam engine, the petrol engine is single acting, that is, work is done on the upper side of the piston only. This obviates the necessity for a piston rod and cross-head, and the connecting rod C is connected directly to the piston by a gudgeon pin D.

The overhead camshaft E is driven from the crankshaft through chains and gears at the front of the engine, the radiator fan F being mounted on one of the intermediate shafts of this drive. The valves, two for each cylinder, are operated by cams through rocking levers G, better seen in the sectional end, Fig. 104. The mixture of petrol and air is delivered from the carburettor H into the induction manifold J, from which a passage leads to each inlet valve K. The exhaust valve and passage, not shown, discharge the waste products to the exhaust manifold L, and thence to the atmosphere. The sparking plug M is shown in Fig. 104. The cooling water spaces are shown at N in both illustrations.

Heavy Oil or Diesel Engine

The essential difference between oil engines and engines of the carburettor type is that in the oil engine air alone, and not a mixture of air and fuel, is compressed in the cylinder. There is therefore no possibility of pre-ignition

during compression. The fuel is injected in a fine spray into the compressed air at the end of the compression stroke, and the temperature of the air is so high that the oil ignites spontaneously as it is being sprayed into the cylinder. The instant at which the fuel enters the cylinder, and the rate at which injection proceeds, determine the maximum pressure reached during combustion. To ensure the ignition of the spray, the air must be compressed to a high pressure and temperature. In most oil engines the compression ratio is of the order of 12 to 14, as compared with 5 to 8 for the petrol engine. Because of the higher compression ratio, the oil engine is more efficient than the petrol engine. A petrol engine consumes about 35 per cent. more fuel than an oil engine of the same power.

Fuel Injection

The most important point in the operation of the oil engine is the injection of the fuel into the air compressed in the cylinder. The fuel must be broken up into a fine spray and intimately mixed with the air in the combustion chamber, for combustion to be completed in the short time available. In the earlier oil engines the fuel was forced into the cylinder by a blast of high-pressure air, and was thus well atomised and distributed over the combustion space. The supply of compressed air necessitated a special air compressor, thus adding considerably to the weight and cost.

In later engines the air compressor has been eliminated, and airless injection of the fuel is the common procedure. In this method the oil is forced through a fine orifice under very high pressure, from a fuel pump. There is a separate

plunger for each cylinder. The pump is driven from the engine by gearing, so that injection takes place at the correct time and at the desired rate.

Heavy Oil Bus Engine

Fig. 105 shows a six-cylinder heavy oil engine, as fitted in buses and lorries. The distinctive feature is the fuel pump, mounted on the side of the engine, with the six delivery pipes leading to the fuel injectors, one for each cylinder. On the right is a section through one cylinder of the engine, showing the piston at the upper limit of its stroke. The connecting rod is not shown in this drawing. The combustion chamber is usually of spherical shape, and is connected to the cylinder by the tangential passage shown. During the compression stroke the air is forced into the spherical chamber, the shape of the connecting passage ensuring a definite swirl. Thus the air is forced to flow past the injection nozzle at high velocity, so

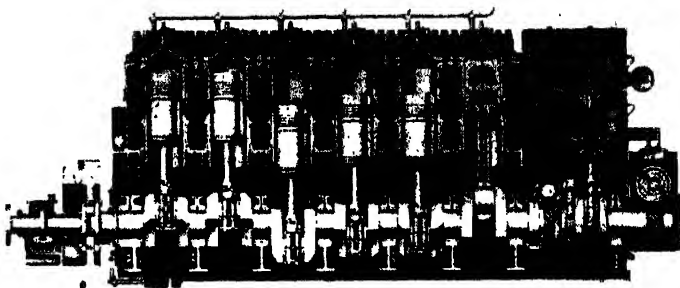


Fig. 106. MARINE OIL ENGINE. Cross-sectional illustration of a large marine two-cycle oil engine.

Courtesy of the Institution of Mechanical Engineers

that, when injection begins and combustion takes place, the products of combustion are swept away from the neighbourhood of the nozzle, and a continuous supply of fresh air is available for the combustion of the fuel.

Marine Direct Injection Oil Engine

Fig. 106 is a cross section of a large marine two-cycle direct injection oil engine. The injection nozzles and porting arrangement are

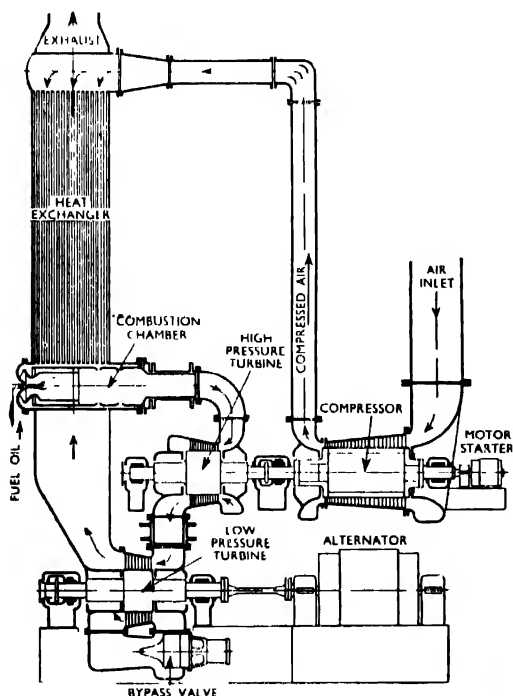


Fig. 107. Diagrammatic arrangement of a gas turbine set.

Courtesy of the Institution of Mechanical Engineers

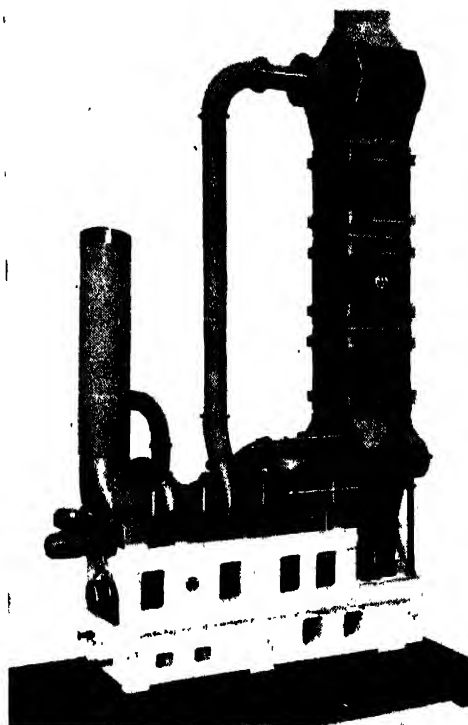


Fig. 108. Model of the gas turbine set shown diagrammatically in Fig. 107.

clearly shown. The student should take note of the large air compressor, sited at the end of the engine opposite to the drive, which supplies scavenge air for the six cylinders.

Principle of the Gas Turbine

The principle of the gas turbine is identical with that of other types of internal combustion engine. The essential difference between the two types of engine lies in the fact that in the piston engine the process is cyclic, whereas in the gas turbine the process is continuous.

Fig. 107 shows diagrammatically a marine gas turbine set. The operation is as follows. Air enters via the inlet trunk into the compressor inlet, and after being compressed it passes through the heat exchanger, where it receives heat from the exhaust gases, to the combustion chamber into which fuel is sprayed and burnt. The resulting gas then passes through a high-pressure turbine, where its temperature and pressure fall as it gives up a large proportion of its energy to drive the

compressor; after this, it is fed to the low-pressure or power turbine, which in this illustration is driving an alternator to provide power for a ship's propulsion motors. As much energy as possible is extracted from the gas during its passage through the power turbine, and as its temperature is still high, a direct exhaust to the atmosphere would be a waste, it is made to flow through the heat exchanger already referred to, before it is exhausted to atmosphere. A by-pass valve is shown across the low-pressure turbine. This valve is opened during starting, to reduce the load on the starter motor, and is also used as a safeguard to avoid dangerously high speeds should the alternator load fail. Fig. 108 is a model of the set shown diagrammatically in Fig. 107.

Gas turbine locomotives are in use in various countries. They are more expensive to construct than the steam locomotive but are cheaper to run. Fuel cost is about equal to that of a diesel-electric locomotive, but there is a general saving in weight and maintenance.

LESSON 14

Water as a Source of Power

THERE has been great development in recent years in water-power resources for the production of electricity, especially in those countries without a plentiful supply of coal or oil. In these power schemes the energy available depends upon the quantity of water flowing through the turbines, and also upon the available "head." The head of water is the height, measured vertically from the level of the water in the reservoir to the level of the water in the tail race leaving the power-house. One pound of water falling through 20 feet is capable of doing 20 ft.-lb.

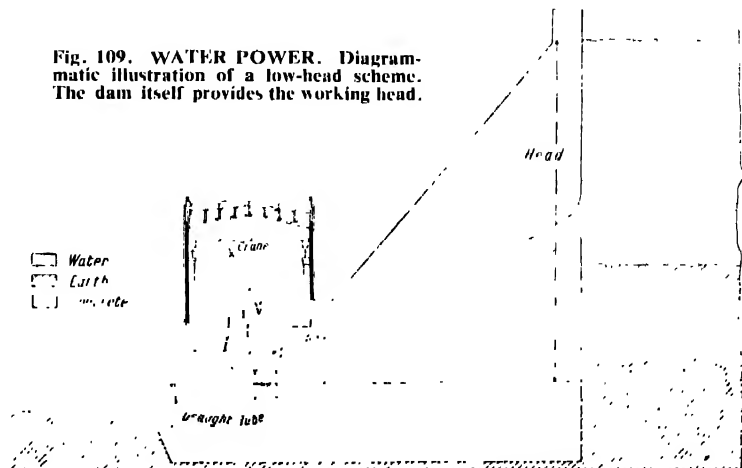
of work, which means that the energy available in the water is directly proportional to the head (the distance through which it falls). For a given power, therefore, the quantity of water required depends upon the available head; the lower the head of water, the greater will be the quantity required. And the greater the quantity of water to be dealt with, the greater will be the size of the turbines, power house, etc., and the more expensive will be the whole project.

Water-power schemes can be divided roughly into two classes, high head and low head. A high head is generally taken to mean not less than 500 feet. There are two types of water turbine, impulse and reaction. The impulse type is generally better suited for high velocities of flow, and the reaction type for low velocities.

High-head and Low-head Schemes

A high head is generally associated with a long pipe-line. For instance, suppose the head is to be 500 feet, then the water must be taken

Fig. 109. WATER POWER. Diagrammatic illustration of a low-head scheme. The dam itself provides the working head.



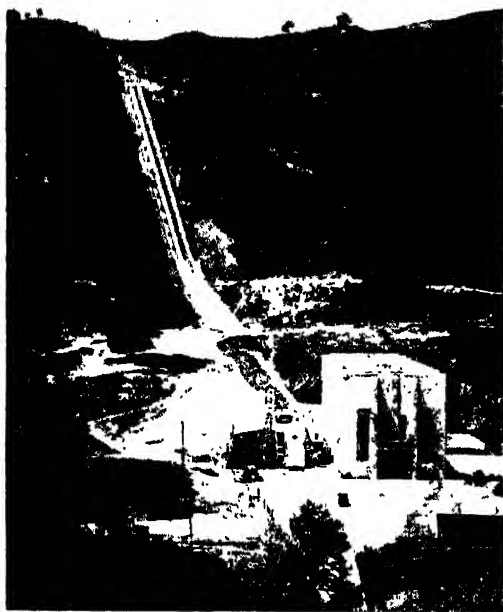


Fig. 110. A medium-head installation, with the pipe-lines leading from the reservoir to the power-house. Reservoir and dam are out of sight beyond the crest.

Courtesy the English Electric Co. Ltd

from the river at a point which is 500 feet, measured vertically, above the point at which the power house is sited and the water is returned to the river. Except in the case of rapidly falling rivers, such a drop in water level requires a considerable distance between the points at which the water leaves and re-enters the river.

This pipe-line is often a tunnel, bored through the mountain side, leading to the power station sited at a lower level and sometimes discharging into a river other than the one supplying the reservoir. The principal function of a dam is to create a storage lake or reservoir. With high-head schemes the height of the dam itself is seldom significant, when considered relative to the total operating head. But with low or medium heads the height of the dam may be of prime importance.

Fig. 109 is a diagrammatic illustration of a low-head scheme. The dam itself provides the working head. Fig. 110 shows a medium-head installation, with the pipe-lines leading from the reservoir to the power house. The reservoir and dam are out of sight beyond the crest of the hill. An example of an unusual high-head installation is shown in Fig. 111. Here the peculiar geographical conditions permitted the construction of a high, relatively short span, arch type dam across the Colorado river canyon. The reservoir formed, called Lake Mead, is 115 miles long, with a shore line of approximately 550 miles. The power houses are at the foot of the dam and are supplied with water via tunnels cut through the canyon walls.

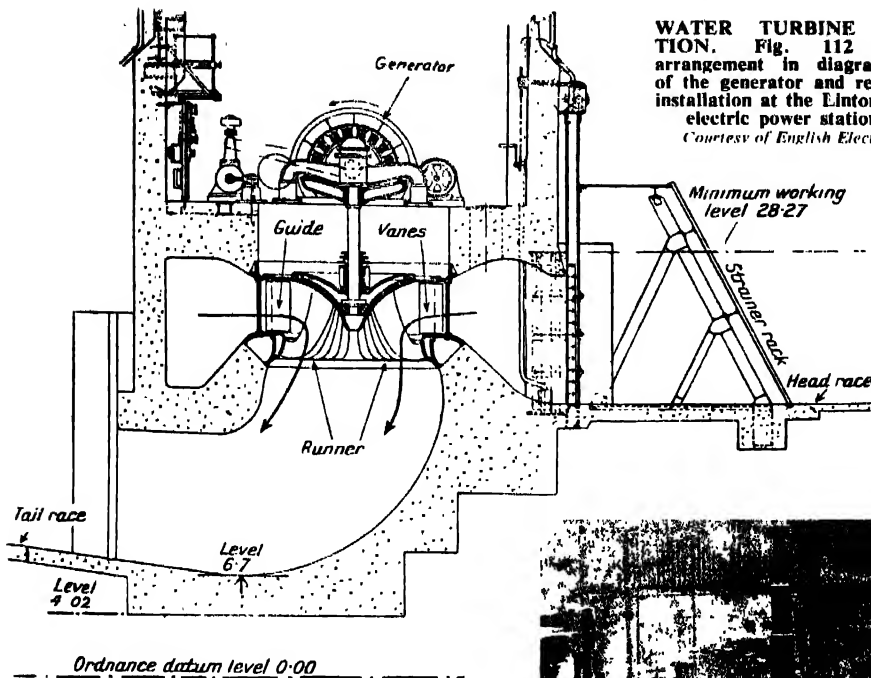
Impulse and Reaction Turbines

In the impulse water turbine the whole of the available head is converted to velocity energy before the water reaches the wheel. The water issues from a nozzle at a high velocity and impinges upon buckets attached to the rim of the revolving wheel, the kinetic energy of the water being absorbed by the wheel.

In the reaction-turbine only a portion of the head is converted to kinetic energy as the water approaches the turbine wheel or runner, and the pressure of the water is above that at the turbine exit. The difference in pressure at entrance and exit forces the water towards the region of lower pressure. Vanes fixed in the turbine runner are situated and shaped in



Fig. 111. An unusual high-head installation. This high, relatively short span, arch type dam—the Hoover dam—is across the Colorado river, U.S.A. The reservoir, called Lake Mead, has a shore line of about 550 miles.



WATER TURBINE INSTALLATION. Fig. 112 shows the arrangement in diagrammatic form of the generator and reaction turbine installation at the Einton Lock hydro-electric power station at York. Courtesy of English Electric Co., Ltd.

such a way that the velocity and direction of the water are changed, and the corresponding loss of momentum of the water reacts upon the vanes and causes the wheel to revolve.

Fig. 112 shows the general arrangement of a low-head reaction-turbine installation. The available head in this instance is only about 9 feet. The head race is seen on the right. A strainer rack prevents floating debris from entering the turbine. The axis of the turbine is vertical; the water enters at the sides and flows out at the lower end, as shown by the arrows. A concrete-lined chamber is arranged around the entrance to the turbine so that a continuous supply of water is provided to the whole periphery. For higher heads this volute chamber is often made of steel, on account of the higher pressures, but for low heads it is convenient to form it in concrete. The water leaving the volute chamber is directed by the guide vanes so that it flows on to the vanes of the revolving wheel with as little shock as possible. These vanes are each pivoted in such a way that the direction in which they guide the water can be varied to compensate for load and head variations. Fig. 113 shows a guide vane assembly in course of erection. The links seen on top of the casing control the inclination of the vanes. Each link is attached at its outer end to a lever fixed to one guide vane, and at its inner end to a ring which is operated by the governor gear through the two

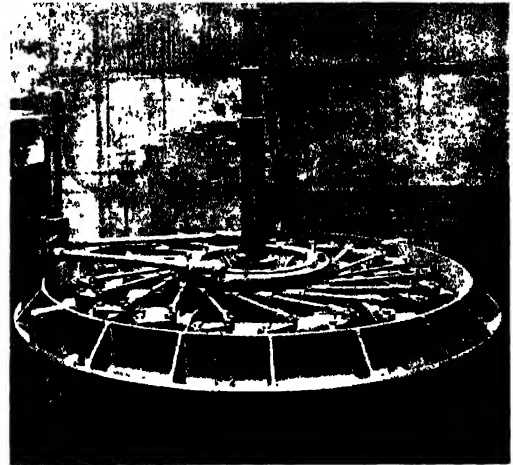


Fig. 113. WATER TURBINE. Guide vanes of a turbine in course of erection. A spindle of the turbine wheel is seen projecting through the cover.

rods shown. The guide vanes themselves are seen below the end cover, which is built into the concrete in such a way (Fig. 112) that the periphery of the guide vanes forms the inner limit of the volute chamber, the upper side of the end cover being open for inspection from the power house floor.

In Fig. 113 the spindle of the turbine wheel or runner can be seen projecting up through the cover. Bevel gearing is used to transmit the turbine power to the shaft of the generator, which is in a horizontal position (Fig. 112). The runner itself is illustrated in Fig. 114, which shows how the vanes are shaped and curved in order to change the velocity of the water. The photograph shows the inlet side

of the runner, on which the guide vanes direct the inflowing water; the discharge is at the bottom. The turbine develops 430 h.p. at 60 rev. per min., the large size of the runner being necessary because of the low head and the large quantity of water required.

This turbine was built for the Linton Lock hydroelectric station of the city of York. The weir across the river gives a head of about 9 feet, and the power house is built close beside it. The passage of river traffic is arranged for by a lock and canal leading from one side of the weir to the other.

Kaplan Runner

The Kaplan type of reaction turbine is a modification of the screw propeller. With the Kaplan, the inclination of the propeller blades can be varied to suit conditions of operation. At any particular load the blades can be moved into the position occupied by those of a fixed-blade propeller designed for that load. Thus the turbine is operated at a constant efficiency right down to low loads. It is specially suitable for very low heads where the quantity of water is great for a given power. A Kaplan runner designed to develop 37,500 h.p. with a head of water of about 36 feet, and running at a speed of 75 revs. per minute, is shown at Fig. 115. It consists of four blades attached to a central boss; this boss is fixed to the shaft



Fig. 114. WATER TURBINE RUNNER. This is the runner of the turbine wheel of the installation shown in Fig. 112. Exit diameter 10 ft., weight 5½ tons.

driving the generator. Inside the boss is housed the mechanism by which the pitch of the propeller is altered to suit varying conditions of load. Each blade is bolted, by the holes shown in the photograph, to a spindle passing through to the inside of the boss, and all four spindles are revolved to the same extent by the operating motor, so that the inclination of each blade is altered by the same amount.

The quantity of water admitted to the circular shaft in which the runner revolves is controlled by guide vanes. When the load falls and the speed begins to rise, the governor operates a mechanism whereby the vanes are moved so as to restrict the flow. At the same time the mechanism inside the runner boss is operated and the blades are moved to the proper inclination corresponding to the flow of water between the guide vanes.

Pelton Wheel

The Pelton wheel is a form of the impulse turbine. The pressure (potential) energy in the water in the pipe-line is converted into kinetic energy by the discharge of the water through a convergent nozzle. The issuing jet, Fig. 116, is directed against a series of buckets attached to the rim of the revolving wheel, the buckets being shaped to absorb the energy of the jet. Fig. 117 shows how the buckets are arranged, a construction allowing of easy replacement. The buckets are cast in pairs, as in Fig. 118. The tips are cut away, to allow the jet to impinge upon the next bucket as the wheel revolves.

Fig. 116 shows the arrangement of the wheel and the nozzle from which the jet issues. The chief point of interest here is the method of controlling the quantity of water flowing through the nozzle, in order to vary the power to suit the requirements of the generator. This method is a combination of a jet deflector and a needle valve. The deflector plate is shown just above the outlet from the nozzle, and is hinged on the pin shown just below the nozzle. The deflector plate is connected by a series of links to the governor mechanism, and, if the speed rises slightly

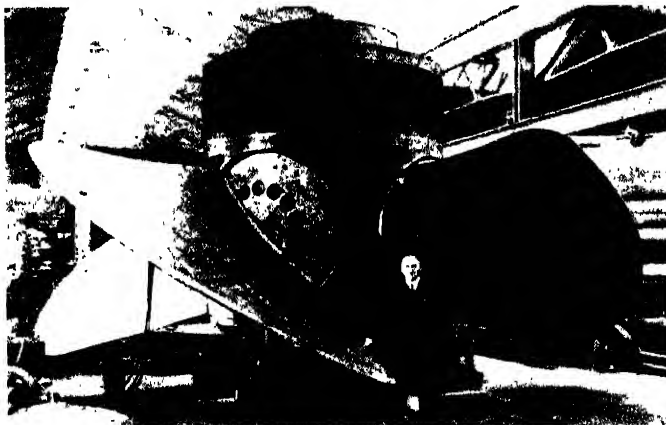


Fig. 115. WATER TURBINE. One of the largest water turbines, this Kaplan runner develops 37,500 h.p., with a head of water of roughly 36 feet, running at a speed of 75 revolutions per minute.

Courtesy of "The Engineer"

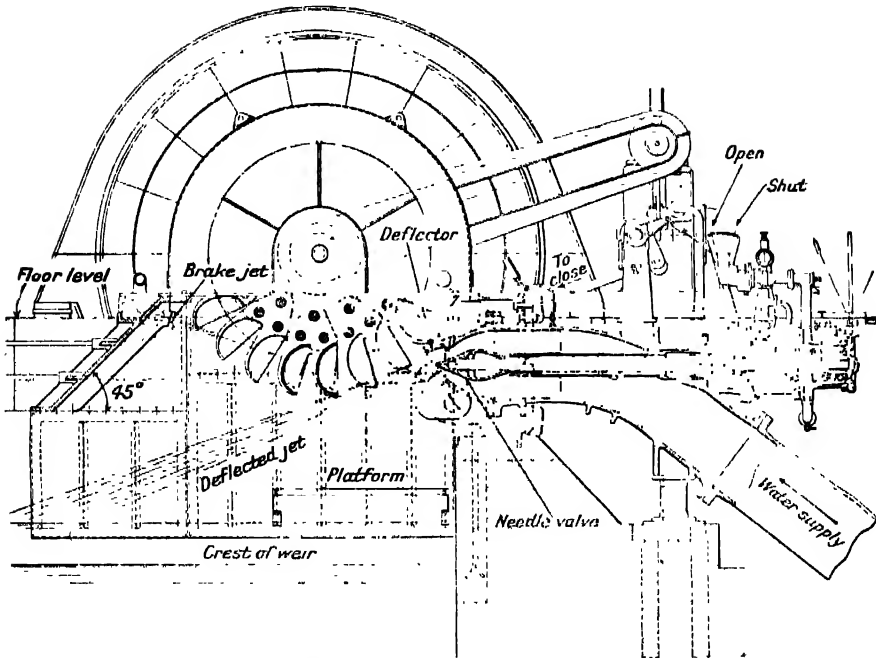
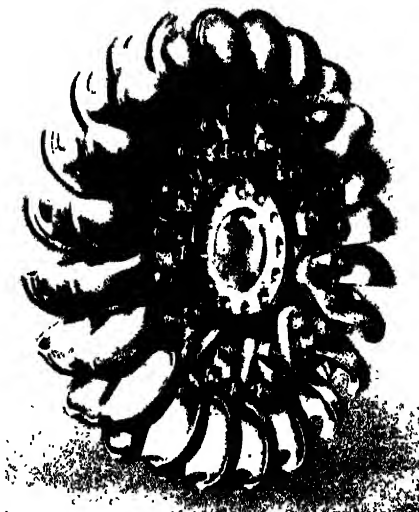


Fig. 116. PELTON WHEEL. Diagram showing the general arrangement of a Pelton runner or impulse turbine.

owing to a reduction in the load, the deflector is moved outwards and downwards into the path of the jet. The stream of water from the nozzle is thus deflected, either partially or wholly, according to the reduction in load; if the water is wholly deflected, it follows the path indicated in Fig. 116.

In this instance the deflector is not the only method of regulation. It is, in fact, only a temporary method used until such time as the main regulator has time to act. The real control is the needle valve shown with the point projecting from the mouth of the nozzle. By moving this needle valve forwards or backwards the area available for the passage of the water can be decreased or increased. In many plants the needle valve alone is used for regulation, and in some small plants the deflector plate alone is used. The disadvantage in using a needle valve alone is that care has to be taken

as to the rate at which the valve is closed. When water is flowing with a high velocity along a pipe its momentum is considerable; if the water is brought to rest suddenly, as by the closing of a valve, this momentum builds up a high pressure on the upstream side of the



PELTON WHEEL. Fig. 117, left. Close-up of the Pelton runner, showing how the buckets are arranged and secured in position. Fig. 118, above. One of the stainless steel double buckets.

Courtesy of "The Engineer"

valve. For this reason it is very important that the needle valve should not be closed rapidly. It also is essential that the governor should act quickly when the load varies; otherwise, large and even dangerous variations in speed may occur.

These conflicting requirements are met by the temporary use of the deflector plate. The governor gear is so arranged that, as soon as the load falls and the speed begins to rise, the deflector plate is moved first to the required extent to control the quantity of water

impinging on the buckets, while the needle valve is slowly moved forward partially to close the nozzle. The deflector plate in itself is not an efficient method of regulation, as it allows water to flow to waste without doing useful work. With the needle valve the quantity of water is reduced, and all the water issuing from the nozzle strikes the buckets and is used to its fullest extent. The brake jet is directed so as to impinge on the backs of the buckets, and it is brought into use when it is required to bring the wheel to rest rapidly.

BOOK LIST

Mechanical. *Applied Mechanics for Engineers*, J. Duncan (Macmillan); *Foundations for the Study of Engineering*, G. E. Hall (Technical Press); *Mechanics Applied to Engineering*, J. Goodman (Longman); *Elementary Engineering Mechanics*, J. B. Thirlwell (Macdonald); *Theory of Machines*, L. Toft and A. T. J. Kersey (Pitman).

Structural. *Theory of Structures*, H. W. Coullas (Pitman); *Strength of Materials*, A. Morley (Longman); *Materials and Structures* (Vol. I, The Elasticity and Strength of Materials, Vol. II, The Theory and Design of Structures), F. H. Salmon (Longman).

Heat Engines. *Steam and Other Engines*, J. Duncan (Macmillan); *Applied Thermodynamics*, W. Robinson (Pitman); *Heat Engines*, D. H. Low (Longman); *Elementary Theory of the Internal Combustion Engine*, F. W. Ludlam (Blackie); *Combustion Engines*, A. P. Fraas (McGraw Hill).

Hydraulics. *Elementary Hydraulics*, F. C. Lea (Arnold); *Hydraulics*, F. H. Lewitt (Pitman); *Water Power Engineering*, H. K. Burrows (McGraw Hill).

ELECTRICAL ENGINEERING

ELECTRICAL ENGINEERING covers such a wide range that it is not possible to deal with all its aspects in one course. This Course is confined to the practical application of the theory of electricity to the electric circuit and, in particular, to the operation of electrical machines, and methods used in the generation, transmission, and distribution of electricity.

The fundamental principles of magnetism and electricity are dealt with in the Course on PHYSICS, in Vol. 2, and it is essential that the student should understand those principles before proceeding further. See also the Course on ENGINEERING, in this volume.

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LESSON 1

The Electric Circuit

FROM the point of view of the engineer, electricity can be defined as a method of conveying energy from one place to another. Electricity is not itself a form of energy. This is easily understood from the hydraulic analogy: consider a pump circulating water through a pipe-line to an hydraulic motor (e.g. crane, capstan, lift). Power is transmitted by the water from the pump to the motor, but the water itself is not the source of energy. The source of energy is the motor or engine that drives the hydraulic pump.

Proceeding with the same analogy the student can obtain an understanding of the units used in electrical engineering. At any point in the pipe-line connecting the pump to the motor you can, with suitable instruments, measure the pressure (p.s.i.) and the flow (in 3/sec. or minute). In the same manner you can in an electrical conductor (the equivalent of the pipe-line) measure the electrical pressure or *potential* as a *voltage*. Flow - *current* in electrical terminology is measured as *amperes*. The product of these two quantities is a measure of the electrical power, called *watts*, just as the product of pressure and flow gives a measure of the power in a hydraulic circuit.

Electromotive Force

The function of the electric circuit is to take in energy at one or more points, and to transfer it in the electrical form to other points where it is converted into other forms of energy. An *electromotive force* (usually written as E.M.F. or \mathcal{E}) can be described as an urge tending to cause or oppose the motion of electricity. If the motion of electricity is in the direction of the E.M.F., then energy is converted into the electrical form and the circuit receives energy at the point where the E.M.F. exists.

If the direction of current is opposite to that of the E.M.F., energy is converted from the electrical form into some other form; in this instance the E.M.F. is referred to as a *back* or *counter* E.M.F. *Potential difference* (P.D.) is the difference in electrical pressure between two different points in an electrical circuit. Therefore E.M.F. can exist at a point and is associated with the *conversion* of energy into or from the electrical form, whereas P.D. is concerned with two different points in a circuit and is associated with the transfer of energy.

Fig. 1(a) shows a circuit divided into two sections A and B by points 1 and 2. If there is a P.D. between these two points, a current flowing round the circuit will transfer energy from part A to part B, or vice versa. Fig. 2(b) shows

a simple circuit consisting of a cell connected to a resistance coil. Inside the cell, chemical energy is converted into electrical energy producing an E.M.F. of \mathcal{E} volts. But since the cell, like every other portion of the circuit, possesses resistance, the available P.D. across the terminals will, when current is flowing,



Fig. 1a

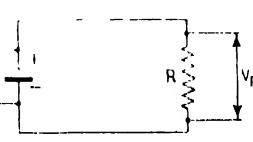


Fig. 1b

be less than the E.M.F. This can be shown by experiment. If a high resistance voltmeter (a voltmeter that will use only a very small current) is connected across the cell before the circuit is closed, the current taken is so small that the reading can be taken as the E.M.F. of the cell. Directly the circuit is closed and appreciable current flows, the voltmeter reading falls and the P.D. is less than the E.M.F. The following is an example.

A battery has an E.M.F. of 100 volts and an internal resistance of .5 ohms. It supplies a lamp that has a resistance of 20 ohms through leads which have a resistance of 1 ohm. Then

Total resistance of circuit = resistance of battery and leads and lamp

$$= R_t = .5 + 20 + 1 = 21.5 \text{ ohms}$$

Ohm's Law gives $E = IR$

$$\therefore \text{Current flowing in circuit} = I = \frac{100}{21.5} = 4.65 \text{ amps}$$

$$\text{Then P.D. across lamp} = E_L = 4.65 \times 20 = 93.02 \text{ volts}$$

$$\text{P.D. drop (or loss) in leads} = 4.65 \times 1 = 4.65 \text{ volts}$$

$$\text{P.D. of battery} = 93.02 + 4.65 = 97.67 \text{ volts}$$

The P.D. across the battery can be determined in another manner, by subtracting from the E.M.F. the voltage drop due to the external resistance, e.g.

$$\text{Voltage drop} = 4.65 \times .5 = 2.33 \text{ volts}$$

$$\therefore \text{P.D. of battery} = 100 - 2.33 = 97.67 \text{ volts}$$

As power in an electrical circuit $= I^2 R$ (or $E \times I$)

$$\text{Power consumed by lamp} = 4.65^2 \times 20 = 432.7 \text{ watts}$$

$$\text{,, wasted by leads} = 4.65^2 \times 1 = 21.6 \text{ watts}$$

$$\text{,, wasted in battery} = 4.65^2 \times .5 = 10.8 \text{ watts}$$

Total output of battery

$$\text{E.M.F.} \times \text{current} = 100 \times 4.65 = 465.1 \text{ watts}$$

Series and Parallel Connexion

Electric circuits in general consist of a number of sections connected in series or parallel, or in a combination of the two.

Three resistances R_1 , R_2 , and R_3 connected in series are shown in Fig. 2. When a current

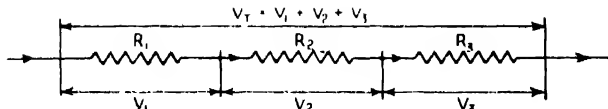


Fig. 2. Resistances connected in series.

is flowing, there is a continuous fall of potential from one end to the other; if the P.D.s across each of the resistances are V_1 , V_2 , and V_3 , then the P.D. across the ends of the series equals

$$V_T = V_1 + V_2 + V_3$$

Since the current I must be the same in each resistance, by Ohm's Law,

$$V_1 = IR_1, V_2 = IR_2, V_3 = IR_3, \text{ and } V_T = IR_T$$

Thus, by substitution,

$$\begin{aligned} IR_T &= IR_1 + IR_2 + IR_3 \\ \therefore R_T &= R_1 + R_2 + R_3 \end{aligned}$$

This can be written: *The total resistance of any number of resistances in series is the sum of the separate resistances.*

Fig. 3 again shows three resistances, but connected in parallel. The total current I_T

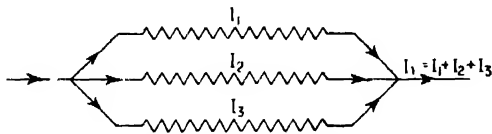


Fig. 3. Resistances connected in parallel.

splits, a portion flowing through each branch, therefore

$$I_T = I_1 + I_2 + I_3$$

Since the P.D. across each resistance is the same, again from Ohm's Law,

$$I_1 = \frac{V}{R_1}, I_2 = \frac{V}{R_2}, I_3 = \frac{V}{R_3}, \text{ and } I_T = \frac{V}{R}$$

Then, by substitution,

$$\frac{V}{R_T} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$$

Dividing by V :

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

Thus for any number of resistances in parallel, *the reciprocal of the joint (equivalent) resistance is equal to the sum of the reciprocals of the resistances.*

The reciprocal of a resistance is sometimes called the *conductance*. Hence the foregoing relationship can be expressed in the form: *the total conductance is equal to the sum of the conductances of the parallel branches.*

Kirchhoff's Laws

To determine the current distribution in more complicated circuits or networks it is convenient to use two generalised relationships, called Kirchhoff's Laws. They are:

First Law: *The algebraic sum of the currents, in conductors meeting at a point, is zero.*

Second Law: *In any closed circuit the algebraic sum of all the E.M.F.s is equal to the algebraic sum of the products of current and resistance in the various portions of the circuit.*

The use of these laws is considered in the following example.

Fig. 4 shows diagrammatically a hypothetical circuit in which must be determined the current in each of the three arms CL, DK, and HJ.

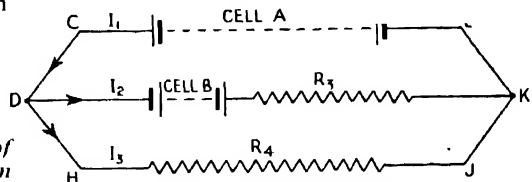


Fig. 4. Hypothetical circuit.

Cell A has an E.M.F. of 100 volts and an internal resistance $R_1 = 5$ ohms.

Cell B has an E.M.F. of 20 volts and an internal resistance $R_2 = 1$ ohm.

$$\begin{aligned} \text{Resistance } R_3 &= 100 \text{ ohms} \\ \text{,, } R_4 &= 50 \text{ ohms.} \end{aligned}$$

Let the current in each of the arms equal I_1 , I_2 , and I_3 , and assume the direction of flow as indicated in the diagram. The actual direction of flow of current is unimportant at this stage; if the assumption is correct, the answer will be positive; if incorrect, the answer will be negative, indicating that the direction is opposite to that assumed.

Applying Kirchhoff's First Law to point D: current flowing towards the point is positive, and away negative. Then

$$I_1 - I_2 - I_3 = 0 \quad \dots \dots \dots (1)$$

Applying Kirchhoff's Second Law to the circuit C D K L,

$$100 - 20 = 100 I_2 + 5 I_1 \quad \dots \dots \dots (2)$$

Treating circuit C H J K in the same way,

$$100 = 50 I_3 + 5 I_1 \quad \dots \dots \dots (3)$$

From equation (1), $I_3 = I_1 - I_2$: substituting this value in equation (3),

$$100 = 50 I_1 - 50 I_2 + 5 I_1$$

Substituting this value for I_3 in equation (2),

$$16 = 22 I_1 - 40 I_2$$

By inserting this value of I_1 in equations (2) and (3),

$$\begin{aligned} I_2 &= 0.678 \text{ amps.} \\ I_3 &= 1.757 \text{ amps.} \end{aligned}$$

All three values being positive indicates that the assumptions for direction of current flow were correct.

The practical unit of power is that of a circuit in which energy is expended at the rate of one joule per second. This unit is called the watt. Hence :

One watt = One joule per second.

One horse-power = 746 joules per second

746 watts = 550 ft. lb./sec.

$\therefore 1 \text{ watt} = 44.2 \text{ ft. lb./min.} = 0.736 \text{ ft. lb./sec.}$

For many purposes the watt is too small and the kilowatt (kW) is used.

\therefore One kilowatt = 1,000 watts.

LESSON 2

Alternating Current

IN the circuits considered in Lesson 1 the current was flowing in one direction only.

Such a current is called a *direct current* (D.C.). In this Lesson we consider current that reverses periodically and is called *alternating current* (A.C.). Since the current that is produced from primary and secondary cells is constant in direction, it follows that early experimental investigations were carried out using D.C. and not A.C. For many purposes either type is suitable ; but for the generation, transmission, and distribution of energy on a large scale alternating current has advantages which have led to its general adoption.

Production of an Alternating E.M.F.

Fig. 5 shows a simple loop of wire rotating with uniform angular velocity in a uniform magnetic field about an axis perpendicular to the direction of the field. E.M.F.s are induced in the sides of the loop that are cutting the field, proportional to the rate at which the field is cut. To enable an external circuit to be connected to the loop, the ends are connected to two conducting rings, which are insulated from each other and from the shaft. The external circuit is connected to two brushes which bear lightly on these rings. The resultant E.M.F. in the loop = $e = Cv$, where C is a constant depending on the length of the sides of the loop, magnetic field

density, etc., and v = the rate at which the sides of the loop cut the field.

If V equals the velocity of the loop, then from Fig. 5b it is apparent that $v = V \sin \theta$.

Hence $e = Cv \sin \theta$.

The maximum value of e occurs when the loop is horizontal, i.e. when $\sin \theta = 1$ (where the rate of cutting of the magnetic lines of force is at a maximum). Calling this maximum value of e $E_{\text{max.}}$, then

$E_{\text{max.}} = Cv$.

Hence the formula for e can now be written

$$e = E_{\text{max.}} \sin \theta$$

If the rate of rotation of the loop is a radians per second, then $\theta = \omega t$, and

$$\therefore e = E_{\text{max.}} \sin \theta = E_{\text{max.}} \sin \omega t$$

Fig. 6 shows a graph of the instantaneous value of the E.M.F. e produced in a rotating loop.

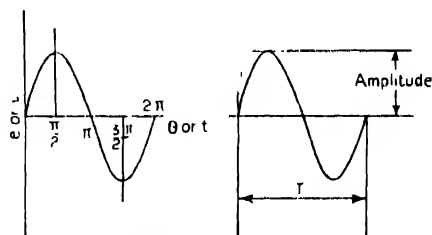


Fig. 6. Graph showing E.M.F. wave of rotating loop.

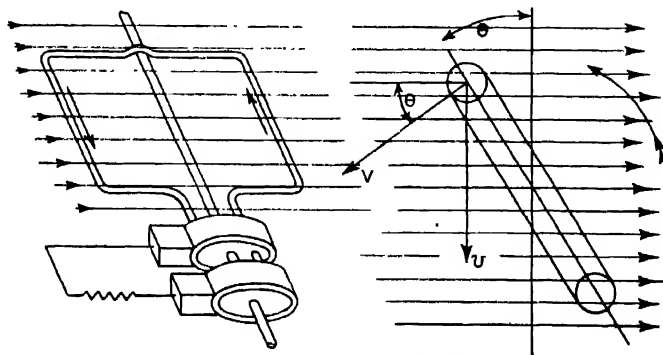


Fig. 5. Loop of wire rotating in a magnetic field.

loop plotted against the angle θ or time t . The E.M.F. varies sinusoidally, reaching a value $E_{\text{max.}}$ positive and $E_{\text{max.}}$ negative once every 2π radians (once per revolution).

Alternating Current

Fig. 5 shows two metal rings, one connected to each end of the loop but insulated from the spindle.

When contact is made with these rings by means of two conducting brushes, one rubbing against each ring, the alternating

E.M.F. will cause an alternating current to flow in the external circuit.

$$\text{Ohm's Law gives } I = \frac{E}{R}$$

$$\therefore i = \frac{E \text{ max. sine } \omega t}{R}$$

$$\frac{E \text{ max.}}{R} = I \text{ max.} \quad i = I \text{ max. sine } \omega t$$

It will be noticed that the wave of the current is identical with that of the voltage waveform.

Effective, Virtual, or R.M.S. Value

In the case of an A.C. current which is varying continuously between a maximum positive and negative value, the problem arises as to what is to be taken as the effective value. When an electric current flows, energy is transferred from one part of a circuit to another. A.C. and D.C. currents are therefore compared on an energy basis. Thus if an alternating current, flowing through a resistance, produces the same amount of heat energy as a direct current having a value I , then the effective value of the alternating current is I .

In this Course it is possible only to state the relationship between the maximum and effective values. Students interested in the derivation of this relationship should consult one of the textbooks on A.C. theory given in the book list at the end of this Course.

The effective value of the current or P.D.

$$\frac{1}{\sqrt{2}} \text{ max. value} = 0.707 \text{ max. value}$$

The effective value is also known as the virtual value or root-mean-square (R.M.S.) value. Unless the contrary is expressly stated, effective values of alternating quantities are always implied and are denoted by the capitals E (volts) and I (current), while the instantaneous values are denoted by the symbols e and i for voltage and current respectively.

The student must not confuse the R.M.S. value with the average or mean value.

The average of an alternating quantity of sine waveform is $= 0.637$ maximum value.

The ratio $\frac{\text{effective value}}{\text{average value}}$ is called the form factor. For a sine wave this equals 1.11.

The frequency of an A.C. supply is the number of cycles per second, that is, the number of times that in one second the E.M.F. (or current) rises from zero to the maximum positive value, falls through zero to the maximum negative value, and rises again to zero. The standard supply frequency in Great Britain is 50 cycles per second; in the U.S.A. it is 60 cycles per second.

Referring again to Fig. 5, one cycle is complete in one revolution of the loop, that is, in 2π radians. Thus, if the loop is rotating at a radians/sec. the time for one cycle (the period) $= T$.

$$T = \frac{2\pi}{\omega}$$

$$\text{and the frequency will be } f = \frac{\omega}{2\pi}$$

$$\text{from which } \omega = 2\pi f.$$

The formula for instantaneous voltage and current can now be written :

$$e = E \text{ max. sine } (2\pi ft.)$$

$$i = I \text{ max. sine } (2\pi ft.)$$

Rotating Vectors

The representation of alternating quantities by drawing the actual sine waves is a very tedious process in any but the simplest cases. Such quantities can be illustrated much more conveniently by means of rotating vectors.

In Fig. 7a, line OA_1 is a straight line rotating about the point O . The length of this line

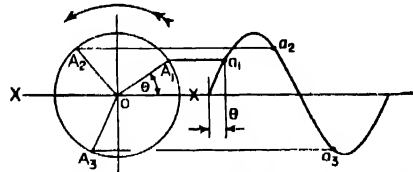


Fig. 7a (left) and b (right). Representation of sine wave by rotating vectors.

represents to a suitable scale the particular quantity $E \text{ max.}$ or $I \text{ max.}$ The vertical height from XX to A represents the instantaneous values of i or e as appropriate, and can be plotted across to construct the sine wave of Fig. 7b, the base of which can, to a suitable scale, represent θ or t .

LESSON 3

Alternating Current Circuits

A DIRECT current flowing in a circuit establishes a uniform magnetic field, and energy is expended in establishing that field, but once it has built up to its maximum uniform value it has no effect on the behaviour of the flow of current and can be neglected.

In an alternating current circuit any magnetic field caused by the flow of current will alternate at the same frequency, and it has a profound effect on the behaviour of various components.

When two alternating quantities of the same frequency attain corresponding values at the

same time, that is, attain their maximum and minimum values at the same time, they are said to be *in phase*.

This condition is shown diagrammatically in Fig. 8; in (a) the condition is represented

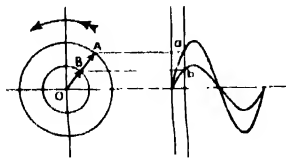


Fig. 8a (left) and b (right).
Two waves in phase.

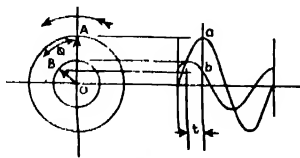


Fig. 9a (left) and b (right).
Two sine waves not in phase.

by means of vectors, in (b) the actual sine waves are shown. The two waves can represent an E.M.F. and a current, or two E.M.F.s, or two currents.

Fig. 9(b) shows two sine waves; but in this instance they are *out of phase*, that is, they do not reach corresponding values simultaneously. The *difference in phase* can be measured by the time elapsing between the instants at which they attain corresponding values (e.g. positive or negative maximums); or more usually by the angle ϕ between the two vectors (Fig. 9a). In the example shown, OB is said to *lead* OA; alternatively, OA is said to *lag* behind OB.

The Sum of Two Sine Waves

Two sine waves A and B of the same frequency but differing in phase and amplitude are shown in Fig. 10(b). Curve C represents the sum of the waves A and B, and is constructed by plotting the sum of the instantaneous values at a number of points along the time axis; this curve is also a sine wave of the same frequency and can be represented by a rotating vector.

Referring now to Fig. 10(a), the line OA is the vector representation of the wave A and the line OB, to the same scale, that of the wave B. The sum of the two vectors is obtained by constructing the parallelogram OBCA; the diagonal OC is thus the vector representing the sum of the two vectors OA and OB. Thus

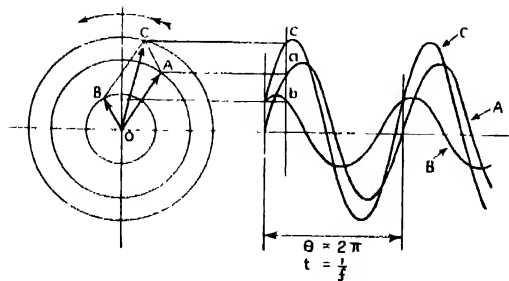


Fig. 10a (left) and b (right). Sum of two sine waves.

the sum of two sine waves of equal frequency is another sine wave of the same frequency, which can be represented by a vector which is the sum of the vectors that represent the component waves.

Inductance

It has been shown that when magnetic lines of force cut a conductor an E.M.F. is induced in a circuit. Before a source of supply is connected to a loop or coil of wire there are no magnetic lines of force; when connexion is made and current starts to flow the number of lines of force (flux) increases and must, of course, cut the coil. This generates an E.M.F. that opposes the growth of current and therefore slows the rate of increase. As the current rises, this E.M.F. decreases until it is zero, when the steady value is attained. While current is flowing against the induced back E.M.F., energy is absorbed and stored in the magnetic field; when the current is falling and the magnetic field collapses, energy is given back to the circuit, so tending to maintain the current. This property of a circuit is called *inductance*, and it can be compared with the mechanical property of inertia by which a body resists a change of velocity.

Circuit Containing Resistance

When a circuit contains resistance only, the instantaneous current is $i = \frac{e}{R}$; that is, at any instant there is a current flowing proportional to the instantaneous applied potential. Thus the current must also be a sine wave in phase with the E.M.F. Hence

$$I_{\max} = \frac{I_{\max}}{R} \quad \text{and} \quad i = \frac{e}{R}$$

This is shown diagrammatically in Fig. 8, in which OA and curve *a* can be taken as representing the E.M.F., and OB and curve *b* the current.

Circuit Containing Inductance

The effect of inductance in an alternating current circuit is to cause the current waveform to lag behind the E.M.F. wave, Fig. 11. If the circuit has inductance only, the angle of lag is 90° and the current is given by the formula

$$I = \frac{V}{2\pi fL}$$

where L = the inductance in Henrys.

The quantity $2\pi fL$ is called the *reactance*, and is denoted by the symbol X . While reactance has the same dimensions as resistance (ohms) it must be remembered that resistance is constant but reactance varies with frequency. For example, a circuit with a reactance at 50 cycles

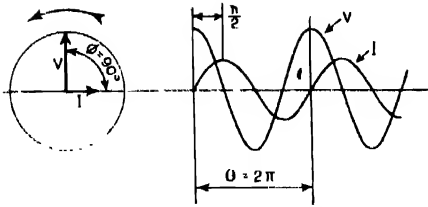


Fig. 11. Circuit containing inductance only.

per second of 10 ohms will have a reactance of 20 ohms at 100 cycles per second.

Inductance and Resistance in Series

Since all inductances must consist of a loop or coil of wire, and as all conductors have resistance, it follows that it is impossible to have an inductance without some resistance. The effect is that of a pure inductance in series with a resistance.

The supply potential V across such a combination can be looked upon as made up of two components: one V_R which overcomes the resistance, and the other V_X which overcomes the inductance (Fig. 12a). The vector diagram Fig. 12b shows I the current plotted horizontally. As the voltage across a resistance is in phase with the current, the voltage vector $V_R = IR$ is superimposed on the I vector. Then as the current through an inductance lags 90° behind the voltage, the vector $V_X = IX$ is plotted vertically. Completing the parallelogram, the vector V is obtained leading I by the angle ϕ . The four sine waves are shown plotted in Fig. 12c. From the vector diagram it is obvious that

$$V^2 = V_R^2 + V_X^2 \text{ or } (IZ)^2 = (IR)^2 + (IX)^2$$

Dividing both sides by I ,

$$Z^2 = R^2 + X^2, \text{ or } Z = \sqrt{R^2 + X^2}$$

This property denoted by the letter Z is called the *impedance* and is measured in ohms. Thus the general equation for A.C. circuits corresponding with Ohm's Law of D.C. circuits is

$$V = IZ$$

Capacitance

The effect of a condenser in a D.C. circuit is to prevent all flow of current; but in an alternating current circuit, because each plate becomes alternatively charged and discharged as the applied potential varies, a current flows in the circuit. In a circuit containing capacitance the current is given by the formula $I = \frac{V}{X}$ and leads the applied potential difference by 90° .

The quantity X is called the *capacity reactance*. It is equal to $\frac{1}{2\pi fC}$, in which C is the capacitance in farads. Where it is necessary to distinguish between the two kinds of reactance, inductive reactance is represented by X_L and capacity reactance by X_C .

Power in an Alternating Current Circuit

The P.D. applied to an alternating current circuit can be considered as made up of two components, one part overcoming the resistance, the other overcoming the inductance or capacitance. The current through the resistance and the P.D. across it are in phase, both being positive through one half of the cycle and negative through the other (see Fig. 8), therefore the product of the instantaneous voltage and current is always positive. If the P.D. across the inductance or capacitance is considered, it will be found that the product of instantaneous voltage and current gives a sine wave which alternates between positive and negative maximum values (at twice the supply frequency) and has an average value of zero.

Hence in a circuit in which there is a difference in phase between P.D. and current, the power is less than the product of P.D. and current (VI), a quantity which is sometimes called the *apparent power* and is expressed in

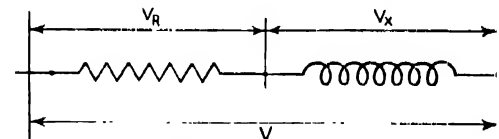


Fig. 12a. Resistance and inductance in series.

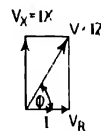


Fig. 12b.

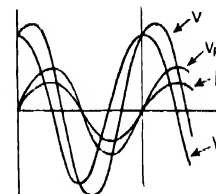


Fig. 12c.

volt-amperes or kilovolt-amperes. The cosine of the phase angle (ϕ) (Fig. 12) is called the *power factor*, because it is the factor by which apparent power must be multiplied to give actual power.

Thus Power = $V_R I = VI \cos \phi$ and generally in an A.C. circuit

Power (watts) = Volt-amperes \times power factor

$I \cos \phi$ is called the active, in phase or energy component; and $I \sin \phi$ the reactive, quadrature, idle, or wattless component.

LESSON 4

Polyphase Circuits

THE loop of wire rotating in a magnetic field shown in Fig. 5 is essentially a *single-phase* alternator. If a second coil is added with its plane at right angles to the first, an E.M.F. is generated of the same frequency and amplitude as in the first coil; but the maximum value occurs in one while the other is at zero. If a third coil is now added, the three arranged with their planes spaced by 120° , the E.M.F.s are represented by three sine waves of equal frequency and amplitude but displaced by 120° . This is shown diagrammatically in Fig. 13. This is shown diagrammatically in Fig. 13 (a). In Fig. 13 (b) the sine wave representation is shown.

The use of polyphase systems, i.e. the use of more than one phase, has a number of

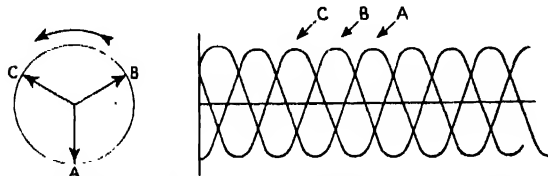


Fig. 13a (left) and b (right). E.M.F.s in a three-phase alternating circuit.

advantages in the generation and transmission of electrical power.

(1) The power output of a polyphase machine is constant instead of fluctuating as the E.M.F. and current varies in single-phase machines.

(2) The size of a polyphase machine is smaller than that of a single-phase machine of the same power.

(3) The construction of a polyphase motor is less complicated, and therefore cheaper, than a single-phase motor.

A three-phase system has several advantages over a two-phase system, but since there is little advantage in increasing the number of phases further the three-phase system has become the standard system for generation and transmission of electrical energy throughout the world.

It is a feature of the three-phase system that the sum of the instantaneous values of the

E.M.F.s or current is always zero. This can be proved as follows:

Let the phases be represented by the suffixes A, B, and C respectively, then as E max. will be the same for all three phases in a balanced system the instantaneous E.M.F.s are

$$E_A = E \max. \sin \omega t$$

$$E_B = E \max. \sin (\omega t + 120^\circ)$$

$$E_C = E \max. \sin (\omega t + 240^\circ)$$

$$E_A + E_B + E_C = E \max. [\sin \omega t + \sin (\omega t + 120^\circ) + \sin (\omega t + 240^\circ)].$$

This can be rewritten

$$\begin{aligned} E_A + E_B + E_C &= E \max. [\sin \omega t + \sin (\omega t - 60^\circ) \\ &\quad + \sin (\omega t + 60^\circ)] \\ &= E \max. [\sin \omega t + 2 \sin \omega t \cos 60^\circ] \\ &= E \max. [\sin \omega t + \sin \omega t] \end{aligned}$$

$$\therefore E_A + E_B + E_C = 0.$$

By substituting I max. for E max. in the above proof it can be shown that

$$i_A + i_B + i_C = \text{zero.}$$

Star Connexion

Fig. 14 illustrates diagrammatically the three windings of a three-phase alternator, each arm representing a rotating loop or coil as shown in Fig. 5. It has already been shown that the sum of the currents in each of the phases is zero; therefore the three centre leads in Fig. 14 (a) can be discarded and the three centre points interconnected. The circuit will now appear as shown in Fig. 14b. A connexion to the *centre, star, or neutral point* is shown dotted. It depends upon the purpose for which the circuit is required whether or not an actual connexion is required.

This method of connexion is usually adopted for the secondary (output) of transformers supplying mixed lighting and power loads, as it is possible to obtain a high voltage for power and a lower voltage for domestic and lighting supply. The R.M.S. voltage between any line (A, B, and C in the diagram) and the neutral point (i.e. the phase voltage) is equal to $1/\sqrt{3}$ times the line voltage, that is, the voltage between A and B, A and C, or B and C.

Mesh Connexion

In the mesh or delta connexion the three loops or coils are connected together in series and the lines connected to the three junctions (Fig. 15). This may seem to be a short circuit, until it is remembered that owing to the phase displacement the sum of the instantaneous voltages is zero so that there is no resultant circulating current. As in

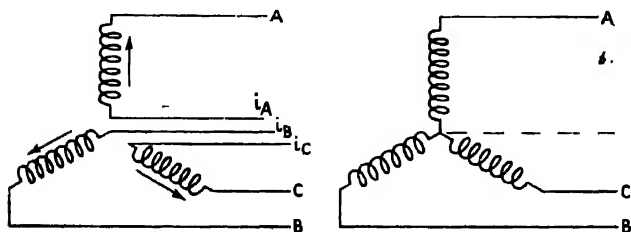


Fig. 14a (left) and b (right). Three-phase system, star connexion.

this system there is one phase between each pair of lines, the line E.M.F. is equal to the phase E.M.F.

The power in a three-phase system is the sum of the powers in each of the three phases. As each of the phases are similar or *balanced* this can be written :

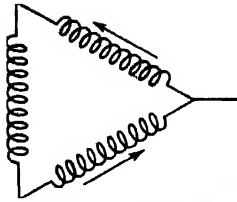


Fig. 15. Three-phase system, mesh connexion.

Total power = $3 E_{ph} I_{ph} \cos \phi$
Thus in a star connected circuit

$$\text{as } E_{ph} = \frac{E_L}{\sqrt{3}}$$

$$\text{and } I_{ph} = I_L$$

Total power = $\sqrt{3} E_L I_L \cos \phi$

and similarly in a mesh connected circuit

$$\text{as } E_{ph} = E_L$$

$$\text{and } I_{ph} = \frac{I_L}{\sqrt{3}}$$

Total power = $\sqrt{3} E_L I_L \cos \phi$

LESSON 5

Dynamos or Direct Current Generators

THE direct current generator is so called because the current flows continuously in the same direction. The alternating current generator, in which the direction of the current changes rapidly, will be dealt with later. The name *dynamo* is usually confined to direct current generators, while alternating current generators are called *alternators*. The word *dynamo* is a contraction for dynamo-electric machine, the name given by Faraday to any machine in which an electric current is generated by the movement of a conductor across a magnetic field, and is thus really applicable to both direct and alternating current generators.

Principle of Direct Current Generator

The generation of an E.M.F. by a loop of wire rotating in a magnetic field was explained in Lesson 2. There (Fig. 5) the ends of the loop are shown connected to two rings upon which the brushes bear. This arrangement produces an alternating E.M.F. (Fig. 6); to obtain a direct current the connexion between the loop and the external circuit must be reversed every half revolution. Fig. 16 shows diagrammatically how this is achieved. The free ends of the loop are connected to opposite sections of the commutator B.

In the elementary case considered, the commutator consists of a ring formed by two pieces of copper separated by strips of insulating material, so that the ends of the conductor A are not in electrical contact. Two commutator brushes, C, made of strips of copper or pieces of carbon, bear lightly against the surface of the commutator, and are connected to the external resistance, R. This external resistance represents the load, e.g. lighting, heating, motor, etc.

With this arrangement one brush is always in contact with the conductor passing the north pole, and the other

brush is always in contact with the conductor passing the south pole. Although the direction of flow in each conductor changes as it passes from one magnet pole to the other, the corresponding part of the commutator passes from one

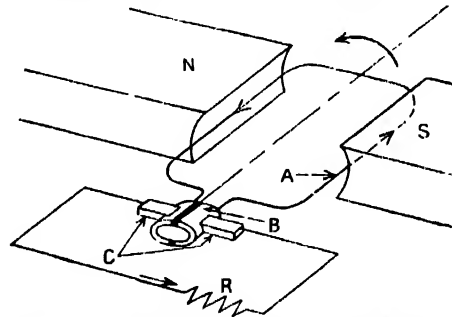


Fig. 16. DIRECT CURRENT GENERATOR. Diagram showing the action of a dynamo. Reference to the lettering is in the text.

brush to the other at the instant when the direction of the current changes, and thus the direction of the current in the external circuit is continuous.

Fig. 17 (a) shows the E.M.F. at the ends of the loop, and 17 (b) the E.M.F. at the brushes. The reversing effect of the commutator will be seen. The E.M.F. still fluctuates, but instead of between a maximum positive and negative value between maximum and zero it is now unidirectional.

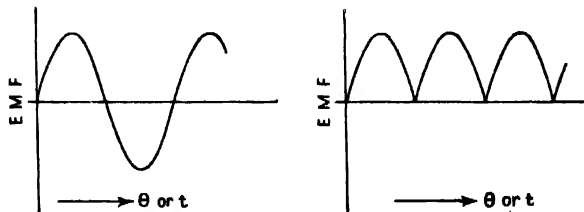
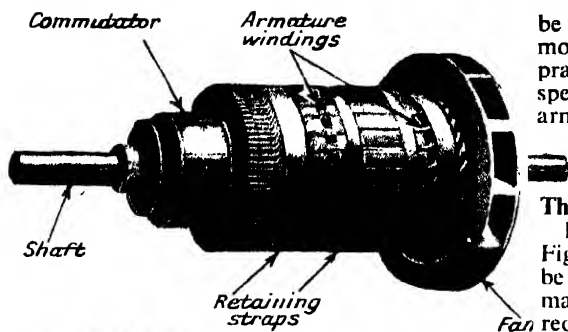


Fig. 17a (left). E.M.F. at ends of loop ; b (right) at brushes in a simple direct current generator.



ARMATURE DESIGN.
Fig. 18a (left). Armature
core disk. Fig. 18b (above).
Complete armature for small
machine.

For practical purposes a fluctuating voltage such as would be obtained from a single loop is undesirable. In electric lighting, for example, any variation in the voltage results in a variation in the intensity of the light, and a periodic fluctuation at too low a frequency would give a flickering light unsuitable for reading. These fluctuations are eliminated by using a large number of loops or coils with a uniform angular spacing, connected in series with one another. All the conductors will be cutting lines of magnetic force at different rates, depending upon their positions relative to the magnetic poles, and the voltage induced in each conductor will be different in consequence.

The direction of the current will be the same in any group of conductors which are moving in the same direction across the magnetic field, and as all these conductors are connected in series, the total voltage in the group of conductors will be equal to the sum of the instantaneous voltages in the individual conductors. Although the instantaneous voltage is different in the different conductors, their sum will be approximately constant if the number of conductors is large. The connexion of one conductor loop or coil with another is made at a segment of the commutator, so that the number of segments in the commutator is equal to the number of coils. The coils are supported in slots on a revolving drum, the armature.

Increasing the Total Magnetic Flux

In Fig. 16 only two field magnets are shown, but four is a more usual number, and in many cases this is further increased. By increasing the number of field magnets surrounding the revolving armature, the total magnetic flux is increased, so allowing a greater power output to

be obtained from a given size of armature. The most economical size of generator uses the largest practical number of poles; generally a low speed machine, which will need a large diameter armature to obtain the desired E.M.F., will use a large number of poles, whereas a small high speed unit may have only four or six.

The Armature

In the case just considered, and shown in Fig. 16, the conductor loop was supposed to be revolving in the air-space between the two magnets. An air-gap in a magnetic circuit reduces the density of the magnetic field, and the longer the air-gap to be traversed by the lines of magnetic force, the less dense the field. In the dynamo the length of this air-gap is reduced by introducing an iron core and fixing the conductors in grooves along the surface of this cylindrical core. This is the *armature*, and the clearance between the outside of the finished armature and the inner surface of the field magnets is made as small as possible.

The conductors are insulated from the iron core, otherwise all the conductors would be in electrical contact with one another. While the covering of the conductors with insulation prevents the passage of an electric current from the conductors to the iron core, it does not affect the magnetic field between the poles of the magnets, and hence it has no effect upon the generation of electricity.

If the armature core were made from a single piece of iron, it would act as a conductor revolving in a magnetic field, and currents would flow in a longitudinal direction, that is, parallel to the axis of rotation. In heavy-duty machines these *eddy currents*, as they are called, can result in a serious loss of energy by causing undesirable heating of the core of the armature.

The generation of eddy currents is prevented

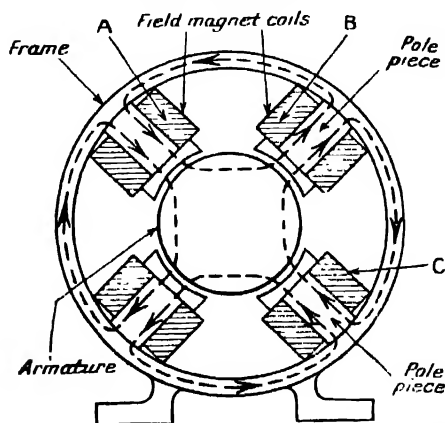


Fig. 19. GENERATOR THEORY. Theoretical arrangement of the magnetic field in a four-pole dynamo, showing path of lines of magnetic force.

by building up the armature core from thin sheets of iron, insulated from each other and clamped together by end-plates. A typical armature lamination is shown in Fig. 18(a). The hole in the centre fits on the dynamo shaft, and the slots receive the insulated conductor windings.

A complete armature for a small machine is shown in Fig. 18(b). The illustration shows the insulated conductors fitted in the slots in the surface of the armature core. The ends of the conductors are connected to the proper segments of the commutator. When the armature revolves, there is a tendency for the conductors to move outwards, owing to the centrifugal forces set up in them. This movement must be prevented, or kept within small limits: on large machines wooden wedges are fitted along the tops of the slots above the conductors; on small machines the ends of the core are wound with wire or provided with steel straps.

As the conductors of the armature must have some resistance, the current flowing causes liberation of heat. Because the conductors are so closely packed, it is usually necessary to ensure a copious flow of air over the armature and field windings. On small and medium-sized machines a fan is frequently fitted direct on the armature shaft; on large and on highly rated machines a separate motor-driven blower is often used.

Field Magnets

The action of a direct current generator has been explained, and the construction of the armature described. The other important parts still to be dealt with are the field magnets, the commutator, and the brush gear. The arrangement of the magnetic field in a four-pole machine is shown in Fig. 19. The pole pieces project inwards from the frame, to which they are usually secured by bolts. Insulated copper wire is wound around each pole piece, as indicated by the cross-shaded portion. When electric current is passed through these coils, a magnetic field is created. The direction of the magnetic field depends upon the direction in which the current flows around the coil, and these directions are arranged to be opposite in alternate coils.

The path followed by the magnetic lines of force is then as indicated by the arrows on the dotted lines. The lines of magnetic force due to coil A, for example, pass inwards from the frame to the pole-tip, and then across the air-gap to the armature. Here the field divides, half going to coil B, half to C. The lines of magnetism cross the air-gap again to reach the pole-tips of coils B and C, and return through the frame to A. When the armature revolves, carrying conductors arranged along its surface, these conductors cut the magnetic

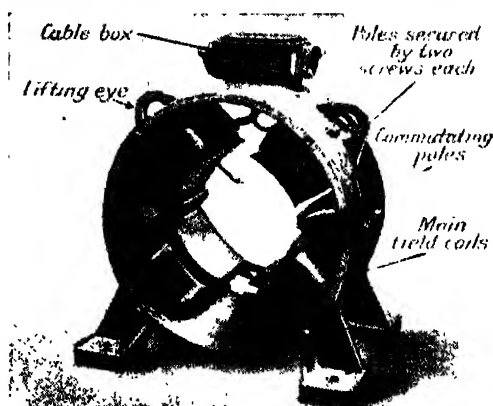


Fig. 20. DYNAMO FRAME. Standard type of frame for a four-pole dynamo or D.C. motor with armature removed showing field magnets.

Courtesy of British Thomson-Houston Co., Ltd.

lines of force, and an electric current is generated in the conductors.

A typical frame for a four-pole machine is illustrated in Fig. 20, the armature having been removed. The four field magnets are shown, and the two screws by which each pole is secured to the outer frame. The field coils are covered with insulation and rendered moisture-proof. The two small poles seen on the horizontal centre-line are fitted for a special purpose—to ensure proper commutation, that is, to prevent sparking at the commutator as the brushes pass from one segment to another.

Field Excitation

Excitation is the name given to the building up of the magnetic field. This can be done in different ways, depending upon the purpose for which the power is required. For example, the necessary current for the excitation of the field coils can be supplied from external sources; the dynamo is then said to be *separately excited*. This method is used only in special cases when complete control of the field current is required.

In most dynamos the field coils are supplied with current generated by the dynamo itself, that is, they are *self-excited*. In such instances the building up of the voltage when the machine is started from rest depends upon the residual magnetism, that is, the small amount of magnetism remaining in the pole pieces after the exciting current has been cut off. When the dynamo is started from rest, a small voltage is generated as the conductors cut the weak magnetic field due to the residual magnetism. This voltage drives a small current through the field coils, increasing the strength of the magnetic field, which in turn causes an increase in the output voltage until the operating voltage

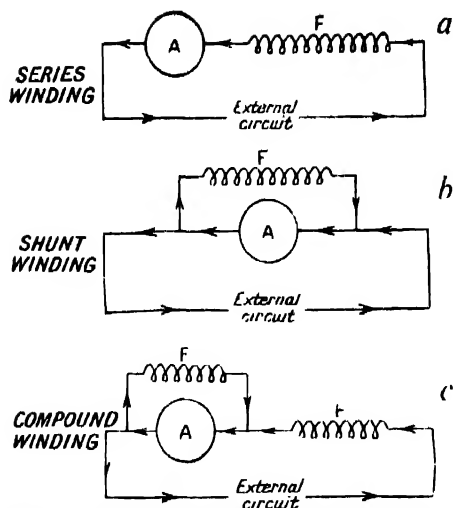


Fig. 21. DYNAMO AND MOTOR WINDINGS. The three methods of winding for field magnetic excitation.

has been reached. There are three possible ways in which a generator can be made self-exciting.

Series Winding. Fig. 21 (a) shows an arrangement where the field coils are in series with the armature; the whole of the current generated passes through the field coils which must therefore be of low resistance. This arrangement is seldom used in practice as it is inherently unstable; increase in load, i.e. in current by further increasing the field strength, produces an increase in output E.M.F., and this causes a further increase in load, and so on until failure results.

Shunt Winding. In Fig. 21 (b) an arrangement is shown where the field coils are connected in parallel with the armature. This is inherently stable and is used for small generators where variation of voltage with load is not important. With increase in load the output E.M.F. falls, but with a suitable controller, e.g. a variable resistance in series with the fields, the output voltage can be accurately controlled.

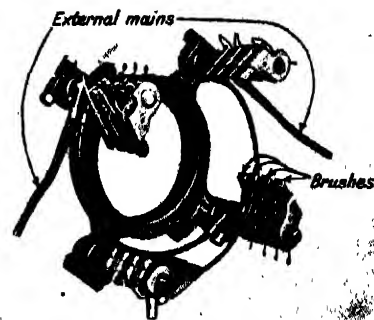
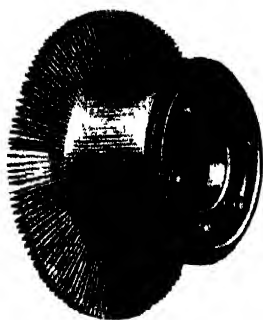
Compound Winding. The third arrangement, Fig. 21 (c), shows a compound winding in which each pole has two distinct windings, one parallel with the armature and a

second in series. This is probably the most common form for industrial dynamos; by suitable design, an output voltage can be obtained almost constant from zero to full load. By over-compounding, that is, a large series field assisting the shunt field, the voltage can be made to increase to any desired extent with increase in load. By differential compounding—in this case, the series field operating in opposition to the shunt field—the voltage can be made to fall with increase in load. Differential compounded generators are used to supply current for arc-welding and to arc lamps.

Commutator and Brush Gear

A picture of a commutator ready for fixing to the end of the armature is in Fig. 22 (a). It consists of a number of copper segments, insulated from each other and from the supporting ring to which they are attached. The inner ends of the segments, that is, the ends towards the armature, are fitted with connecting pieces extending radially outwards; to the ends of these the corresponding conductors are attached. The brushes are mounted on a frame bolted to the casing, as shown in Fig. 22 (b). This illustration shows a gear in which there are four sets of brushes; the number of sets of brushes required depends upon the number of field magnets and upon the arrangement of the armature windings.

The brushes are of carbon, pressed on the surface of the commutator by light springs. Each brush is connected to main leading to the external circuit, and opposite sets of brushes are connected together. The external mains are then connected to two adjacent sets of brushes, Fig. 22 (b).



COMMUTATOR AND BRUSH. Fig. 22a. (left). Commutator before fitting to the armature. Fig. 22b (right). Brush gear mounted on frame.

Courtesy of General Electric Co., Ltd.

LESSON 6

Direct Current Motors

THE principle underlying the action of an electric motor is the reverse of that which applies to the dynamo. In the dynamo, conductors are moved by mechanical means across a magnetic field, and an electric current is induced in each conductor; in the motor the procedure is the opposite. Electrical energy is supplied to conductors lying in a magnetic field, and mechanical energy is produced in the resulting movement of the conductors.

The same machine can be used either as a dynamo or as a motor; if the conversion of energy is from mechanical to electrical, the machine is a dynamo; if the conversion is from electrical to mechanical, the machine is a motor.

This property of reversibility of function is made use of in some of the most up-to-date engine-testing plants, especially for small high-speed engines such as are suitable for road vehicles. The engine is coupled to a dynamo which absorbs the power generated, at the same time offering a ready and accurate method of measuring the power output of the engine. The same machine, supplied with power from the electric mains, is also used as a motor to give the engine its initial run-in before it starts running on load.

Ohm's Law and the Motor

When the armature of a motor revolves, the cutting of the magnetic field by the conductors sets up a voltage in the armature circuit. This induced voltage is opposite in direction, i.e. a counter E.M.F. to the applied current, so that the actual current flowing in the armature is proportional to the difference between the applied voltage and the induced voltage. The magnitude of the current is given by Ohm's Law:

$$\text{Current in amperes} = \frac{\text{Voltage}}{\text{Resistance in ohms}}$$

If E = voltage applied and

e = induced voltage due to rotation of the armature, then effective voltage = $E - e$, and current flowing in armature = $\frac{E - e}{R}$

where R = resistance of the armature.

The current flowing in the armature determines the size of the cross-section of the armature conductors, in order to prevent overheating, and it is usual to design the conductors to suit running conditions at full load. But the conditions when starting from rest are not the same as when running at normal speed. It must be remembered that the opposing voltage induced in the armature conductors is

proportional to the rate at which the magnetic field is cut—that is, it depends upon the speed, and when the speed is zero the opposing voltage is zero. Thus, when the motor is starting from rest, the current flowing through the armature would be given by

$$\text{Current} = \frac{E}{R}, \text{ since } e = 0.$$

This current might well be many times as great as the normal full load current, and precautions must be taken to prevent its reaching excessive value. The usual method is to provide a variable resistance in the armature circuit. This resistance is all in at starting; then, as the speed rises, and the induced voltage increases, the resistance is gradually cut out, until at full speed the resistance is all out.

Windings

As with the dynamo, the performance of a motor depends upon the type of field winding, whether series, shunt, or compound. Any of these arrangements can be used, according to the conditions under which the motor is required to work. The arrangement of the winding is the same as that illustrated for the dynamo.

Series Winding. As the field coils are in series with the armature, the field strength is proportional to the total current. While the motor is at rest or rotating slowly, the back E.M.F. of the armature is low and the current is therefore high. The high current plus the high field strength allows a high starting and low speed torque to be developed, a property which makes this type of machine particularly suitable for traction and crane motors, etc. It is for this reason that direct current is used for most traction systems. While torque falls with increase of speed, it is essential to maintain a load on a series motor, as otherwise it is possible for the speed to rise to a dangerous level.

Shunt Winding. As in this case the field coils are shunted across the supply, i.e. parallel with the armature, the field strength remains constant irrespective of fluctuations in load. The shunt motor will therefore run at a fairly constant speed, provided that the supply potential remains constant, but it has not the starting characteristics of the series machine. Shunt motors are suitable for machine tools, textile machinery, etc.

Compound Winding. As with the compound generator, by adjusting the relative strengths of the series and shunt coils it is possible for the compound motor to give any characteristic between those of the series and shunt motor. This may vary from the machine designed to give accurate control of speed to a machine

with a slight falling characteristic where the drop in speed relieves the load under overload conditions, or to the machine with predominantly series characteristics but with just sufficient shunt field to limit the maximum speed to a safe value under no-load conditions.

Speed Control of Motors

While series wound motors are generally unsuitable for speed control, their characteristics under load can be varied by shunting part of the current through a resistance connected in parallel with the fields. As in a series motor, the field coils pass the full current; this method is wasteful and is used only in special circumstances. The speed of shunt-connected motors can be varied by altering the strength of the current flowing through the field coils. This is

usually effected by inserting a variable resistance in series with the field windings. Shunt-field control, as it is called, is also used to obtain variable speed from some compound-connected machines. The speed of the motor will vary inversely as the strength of the field, that is, the weaker the field the higher the speed, and vice versa.

The speed can also be varied by altering the voltage applied to the armature. This method is expensive and complicated and is used only when accurate control of speed is required irrespective of load. The motor armature is connected in series with the armature of a generator, and the field strength of the motor is maintained constant while the field strength of the generator is adjusted to vary the output voltage to give the desired speed at the motor.

LESSON 7

Alternators or Alternating Current Generators

IN Lesson 2 the principle underlying the generation of an alternating current was explained. Because it is necessary to use a commutator to obtain direct current from the A.C. generated in a rotating loop, D.C. generators use a stationary magnetic field and rotate the coils in which the current is generated. This is convenient, but it has the disadvantage that the full current must be transmitted via the rotating commutator, whereas the stationary part of the machine, the fields, requires only a relatively low current. When alternating current is required, advantage can be taken of the fact that a commutator is not needed by reversing the system, i.e. rotating what is virtually the fields while the coils in which the current is generated remain stationary.

Fig. 23(a) illustrates an elementary single phase alternator. The *rotor* consists of a permanent magnet secured to the shaft; as the shaft rotates, the magnetic field linked with the magnet will also rotate and cut the conductors

wound on the stator. The simplicity of this arrangement is apparent when comparison is made with the rotating coil alternator (Fig. 5, Lesson 2). It should be noted that the output of the alternator described in this Lesson is taken direct from the stationary windings and not via slip-rings. This type of single-phase alternator is commonly used for bicycle lamp generators.

Fig. 23(b) illustrates a three-phase alternator on the same principle; it has three pairs of poles, one pair for each phase. In practice, these windings would normally be connected in star (Fig. 23c), requiring only four stationary connexions; if the rotating coil method was used, four slip-rings capable of carrying the full output current would be needed.

This construction is used for all alternators, except that the permanent magnet is replaced with a rotor which carries a D.C. winding. Connexions are made to this rotor via a pair of slip-rings; by passing a current through the

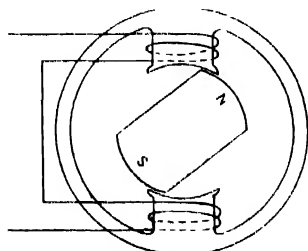


Fig. 23a. Single-phase alternator.

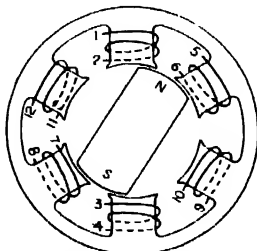


Fig. 23b. Three-phase alternator.

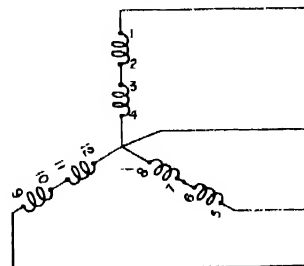
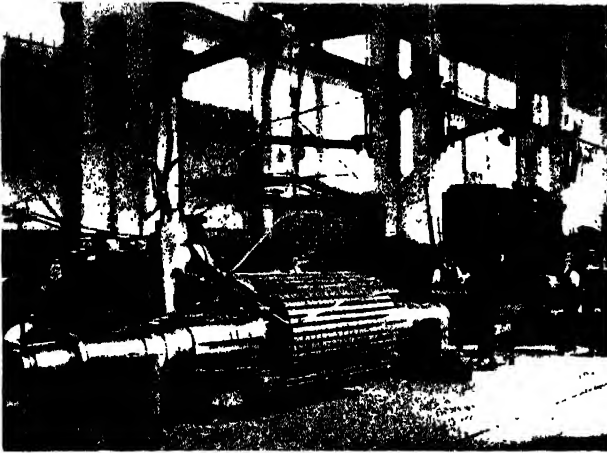


Fig. 23c. Three-phase alternator, star connected.

The numbers correspond with those at the coil ends in Fig. 23b



TURBO-ALTERNATOR CONSTRUCTION. Fig. 24 (left). A rotor of a turbo-alternator showing how the windings are embedded in slots in the surface of the rotor. Fig. 25 (right). A stator of a 6,000 kVA turbo-alternator. The end windings of the stator can be seen.

Courtesy of General Electric Co., Ltd

rotor windings a powerful field is created which will, of course, rotate as the shaft is rotated. By adjusting the current through the rotor windings, the rotor excitation current, the magnetic field strength, and therefore the output voltage of the alternator can be varied

At first sight it may appear to the student that the advantages of this construction, as compared with the rotating loop, are lost as soon as slip-rings are added to feed the excitation current to the rotor. The fact that this is not so will be obvious when it is realised that only two slip-rings are required irrespective of the number of phases wound on the stator, and that these slip-rings carry only the relatively low excitation current and not the total output of the machine.

There is another and very important advantage in a construction that leaves stationary the windings in which power is generated. Power in an electric circuit is given by the product of volts and amperes, and conductor size is governed by its current carrying capacity and not by the voltage, therefore the higher the voltage the lighter and more compact the windings of a generator become. The absence of commutator or slip-ring and brush gear insulation problems allows high voltages to be used. Alternators operating at voltages of 6,600 or 11,000 are common, and machines generating at 33,000 volts are in service.

When the rotor consists of a single pair of poles as in the diagram Fig. 23(a), one revolution of the rotor will give one complete cycle; thus the frequency is equal to the revolutions per second of the rotor. This can be written

$$f = \frac{\text{R.P.M.}}{60}$$

As the standard frequency for power and domestic use is 50 c.p.s. we can by substitution in this formula obtain the alternator speed :

$$50 = \frac{\text{R.P.M.}}{60} \quad \text{R.P.M.} \quad 3,000$$

It follows that as a machine with fewer than two poles (a pair of poles) cannot be built, the maximum speed for a 50 c.p.s. alternator is 3,000 R.P.M. Fig. 24 shows the rotor of a turbo-alternator at the winding stage of its construction. Fig. 25 illustrates the completed stator ready to receive the rotor and end covers. Two pole rotors constructed by embedding the excitation windings in slots cut in a solid steel drum are commonly used for turbo-alternators, because they are particularly suitable for high speed operation.

Turbo-alternators with outputs up to 40,000 kVA are built as two-pole machines (3,000 R.P.M.); for outputs above this, four-pole machines running at 1,500 R.P.M. are used. Medium-speed machines to be driven by water turbines usually operate at speeds between 500 R.P.M. (12-pole) and 250 R.P.M. (24-pole); some large low-speed machines may have as many as 32 poles (187.5 R.P.M.). Machines with four or more poles are called salient pole alternators. In these the windings are on separate poles bolted to a cylindrical drum or wheel.

Efficiency Loss

Fig. 26 shows an example of modern turbo-alternator construction. It illustrates a 31,250 kW unit built by International General Electric for installation in a power station in Palermo, Sicily. The cooling of large turbo-alternators



Fig. 26. A turbo-alternator with capacity of 31,250 kW.
By permission of the Esso Petroleum Co., Ltd., from "Esso Oilways," Vol. 7

presents a formidable problem to the engineer. A 20,000 kW alternator may have an efficiency of 96 per cent., but even at this high figure the loss represents 800 kW of heat energy that must be dissipated into the cooling air if overheating is to be avoided. In spite of advances in insulation materials and in construction there is still room for improvement.

Fig. 27 shows the first home-built hydrogen cooled alternator constructed in Great Britain. In this machine the cooling medium is hydrogen, and the advantages of this interesting development are as follows :

(1) The low density of hydrogen reduces the windage losses and thus gives an increase in efficiency of between 0.5 per cent. and 1 per cent.

(2) The higher thermal conductivity and heat transfer coefficient of hydrogen allows a greater output from a given size of machine.

(3) The insulation life of the machine is considerably greater in hydrogen than it is in air.

The construction of these machines is similar to the air-cooled units except that they must be totally enclosed ; the hydrogen is circulated by fans through the machine and through suitable coolers. Precautions have to be taken to prevent risk of explosion,

a risk that would be present if air was allowed to mix with the hydrogen. The hydrogen is kept at a purity of at least 90 per cent., and is normally between 95 per cent. and 98 per cent. When starting up or when closing down for inspection of the alternator, carbon dioxide is used for scavenging the air before admitting hydrogen into the stator casing, and for scavenging the hydrogen before opening up the alternator and admitting air. The usual running pressure is 0.5 p.s.i. gauge, that is, slightly above atmospheric pressure, to ensure that any leakage that might take place is leakage of hydrogen from the alternator and not leakage of air into the machine.

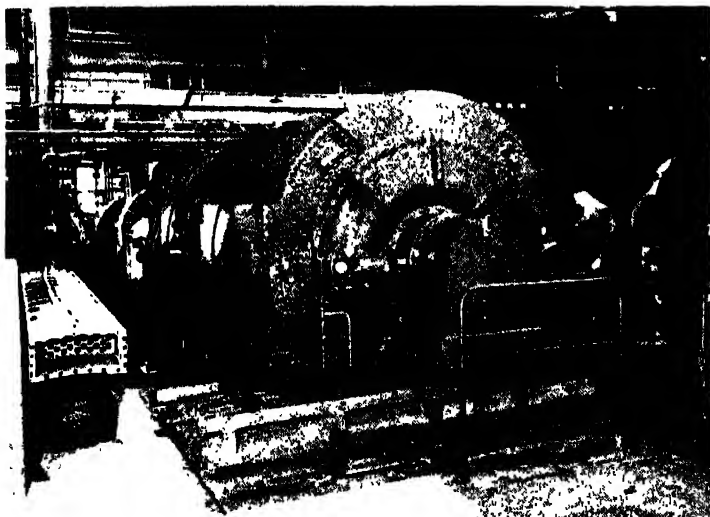


Fig. 27. The first British-built hydrogen-cooled turbo-alternator test at the Metropolitan-Vickers works at Trafford Park.

LESSON 8

Alternating Current Motor

IT was shown in Lesson 6 that with direct current the action of a motor is the reverse of the dynamo, and that a direct current machine will operate equally well as a generator or as a motor according to whether it is being supplied with energy in the mechanical or the electrical form. The same is true of alternating current machines.

Consider again Fig. 23(b). In the generation of an alternating current the rotor is supplied with a direct current which, in passing through suitable windings, induces a magnetic field that rotates as the input shaft is driven. This magnetic field cuts the stator windings, so inducing the E.M.F. which causes current to flow through the windings and external circuit.

Imagine an identical machine, but instead of supplying mechanical power to the input shaft the stator windings are connected to a three-phase supply. The magnetic field at each stator pole will rise, fall, and reverse in phase with the mains supply, and as each phase is displaced by 120° they will rise, fall, and reverse in sequence, so creating a rotating magnetic field in the stator. If now the rotor is supplied with D.C. excitation current, the poles produced in the rotor will interlock with the rotating field causing the rotor to rotate in unison. Such a machine is called a *synchronous motor*.

Synchronous Motors

Synchronous motors are used where an accurate speed is required. As with alternators, the actual speed depends upon the number of pairs of poles, as follows :

Let n = number of poles, i.e. $\frac{n}{2}$ number of pairs of poles

supply frequency in cycles/second

Then $\frac{2f}{n}$ speed in revolutions/second

and $120f$ speed in revolutions/minute.

Most machines of this type are built with a small direct current generator mounted on an extension of the motor shaft, the sole function being to supply excitation current to the rotor.

It is a property of synchronous motors that by adjusting the excitation current they can be made to take a leading or lagging current. For this reason they are often installed in factories, running light or supplying power to some constant load, to effect an overall power factor improvement to the supply to the whole plant.

Special provision must be made to enable a synchronous motor to be started and run up to speed, as the torque output at below synchronous speed is very low. The method normally adopted is to provide the rotor with an induction winding in addition to D.C. winding.

Induction Motors

The three-phase induction motor is by far the most widely used type of electric motor. Nikola Tesla (1857-1943) concentrated his attention on the formidable problem of designing an electric motor that would operate without commutator or brushes, and in 1887 he constructed the first three-phase induction motor.

In this type of machine there is no electrical connexion whatsoever to the rotor, the energy being transferred entirely magnetically by means of the E.M.F. induced in the conductors of the rotor.

In the simplest form of induction motor the rotor consists of

a laminated iron drum in the surface of which conductors are embedded. These conductors, which need not be insulated from the rotor, are simply connected together at the ends, giving the appearance of a cage, from which the name "squirrel-cage motor" is derived. The rotor and stator of a small motor of this type are shown in Fig. 28 ; the rotor here is a stack of iron disks suitably slotted to receive the conductors which are of aluminium cast into position, integral with the end connecting rings and cooling vanes. The whole is then mounted on the motor shaft and machined ready for assembly into the stator.

The E.M.F. induced in the conductors by the rotating magnetic field of the three-phase stator causes currents to circulate, and the forces thereby exerted on the bars produce a torque which causes the rotor to rotate in the same direction as the stator field. As the speed of the



Fig. 28. Squirrel-cage motor. Stator and rotor of a small motor of this type using three-phase current.

Courtesy of General Electric Co., Ltd.

rotor increases, and approaches that of the rotating field, the rate at which the magnetic lines of force cut the rotor conductors decreases and therefore the available torque falls. At no load the speed will very nearly approach synchronous speed.

The application of load causes *slip*, and this increases the circulating currents in the rotor and therefore the torque. The resistance of the rotor is low and the E.M.F. required to create sufficient circulating current is not large, so that the difference between no load and load speed is about 2 per cent. in a large machine, and seldom more than 5 per cent. in a small machine.

If a squirrel-cage motor is connected directly to the mains supply, it takes a current equal to about five times the full load value, and this quickly decreases as the motor accelerates. A surge of current of this magnitude in all but small machines would disturb the supply voltage in the immediate neighbourhood, so direct starting is limited by the supply authorities to motors not exceeding 3 h.p. or in some cases 5 h.p.

Star-Delta Starter

The commonest method of starting induction motors is the star-delta system; the stator windings of a three-phase motor are in three sets, each set being supplied by a pair of leads. Connexion is made from these six leads via a changeover switch to the mains, in such a manner that with the switch in the start position the windings are connected in *star*; when the switch is in the run position, the windings are *delta* connected. By this means the potential across each phase during starting is reduced to $1/\sqrt{3}$ or 58 per cent. of its normal value.

The auto-transformer starter is a more

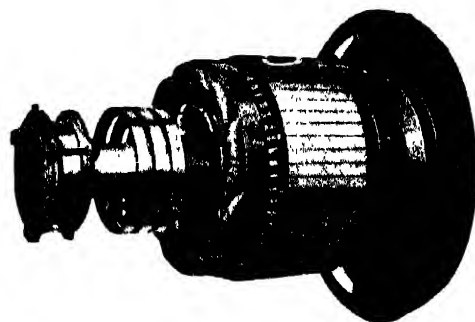
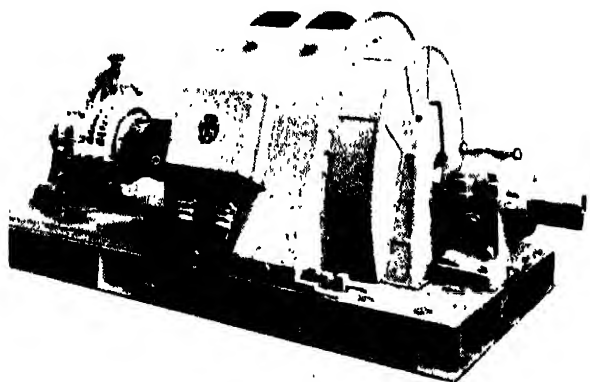


Fig. 29. Armature of an induction motor showing slip-rings.

Lancashire Dynamo & Crypto Co., Ltd

expensive system, in which a special transformer provided with voltage tappings is used in conjunction with suitable switchgear to supply a variable voltage to the motor. The motor can be started at low voltage, which is raised in steps as the motor speed rises until at full speed mains voltage is reached and the transformer is disconnected.

Speed Control

The induction motor is essentially an almost constant-speed machine, and speed control entails either added complication or sacrifice of efficiency. Where speed control is required for short periods, and in particular to give smooth acceleration on starting, a slip-ring type of induction motor is used. The principle of operation is precisely as described for the squirrel-cage motor, but the construction varies in that the rotor carries a three-phase winding, mesh connected, the three common points connected to slip-rings. The speed is adjusted by varying three external resistances connected in mesh to the brushes that bear against these rings. To start a motor of this type, the resistances are set at the maximum and the stator windings connected to the mains supply. As the resistances are reduced, the speed will rise, until at full speed the brushes are shortened and the motor is running as a normal squirrel-cage motor. Fig. 29 illustrates a rotor. Fig. 30 shows a 4,500 h.p. slip-ring induction motor.

Fig. 30. INDUCTION MOTOR. Induction slip-ring motor of 4,500 h.p. taking 6,600 volts at 370 r.p.m. It has a racking stator.

Courtesy British Thomson-Houston Co., Ltd

LESSON 9

The Transformer

MODERN generators produce power at relatively low voltages (6,600–11,000 volts) because this is more convenient. But low voltage current cannot be carried economically over transmission lines hundreds of miles long, so it is necessary to step up the voltage from the generators for transmission over long distances and then to step it down to a value suitable for consumer use. The transformer is a static, relatively simple device by which the voltage in an alternating current system can be increased or decreased as required. For this reason it can be described as the heart of a modern distribution system.

Electro-Magnetic Induction

A simple arrangement by which the principle of the transformer can be illustrated is shown in Fig. 31. Two conductors are lying close to each other; one is connected to a storage battery through a switch, so that a current can be started or stopped in this conductor by closing or

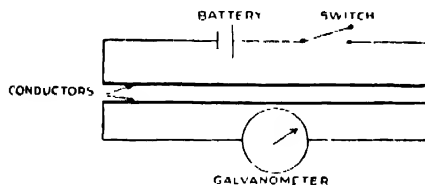


Fig. 31. ELECTRO-MAGNETIC INDUCTION. Diagram illustrating the principle of the transformer.

opening the switch. The ends of the other conductor are connected to a galvanometer, an instrument used to indicate the passage of an electric current in a circuit.

When the switch is closed and current flows in the first conductor, the galvanometer needle makes a momentary movement—returning to its zero position as soon as the current is flowing at a steady rate in the first circuit, showing that no current is flowing in that circuit. When the switch is opened, and the current in the first conductor falls to zero, the galvanometer again indicates a current in the second conductor, but this time in the opposite direction to that obtained by switching on.

It can thus be shown that a current is induced in the second circuit when the current in the first is changed, and the induced current flows only during the time the first current is changing in strength. Also, the direction of the induced current depends upon whether the first current is increasing or decreasing. This induced current

is caused by the changing density of the magnetic field in which the conductor is lying, and the strength of the induced current depends upon the strength of the magnetic field and upon the rate at which it changes in strength. If the first circuit is supplied with alternating current, the intensity of the magnetic field surrounding this conductor will be continually changing, and a similarly changing current will be induced in the other conductor.

Transformer Principles

In practice, to avoid loss of magnetic flux, the two conductors are formed in coils, and a continuous iron core passes through both coils. In this way the same magnetic field is linked with both primary and secondary circuits. The strength of the magnetic field is proportional to the product of the number of turns of wire in the coil and the strength of the current flowing in the coil. By using different numbers of turns of wire in the two coils, the strength of the currents flowing in the two circuits can be caused to have any desired relationship to one another.

Further, since the power put into the primary winding is approximately equal to the power got out of the secondary, the voltages in the two circuits will have approximately the inverse relationship to that of the currents. For example, if a transformer is required to reduce the voltage from 3,000 to 300, the voltage on the primary coil is ten times that on the secondary; therefore the current in the primary side is one-tenth of that in the secondary, and hence the number of turns in the primary coil must be ten times the number in the secondary coil. The high voltage winding consists of a large number of turns of comparatively fine wire; the low voltage coil is made up of a smaller number of turns of thicker wire.

Actually, there are losses of energy in transformation. These losses can be divided into three separate parts: copper loss, that is, loss due to the resistance of the copper conductors; iron loss, due to eddy currents; and flux leakage. The copper loss can be reduced by using conductors of large cross-section, and the iron loss can be reduced by using a core of large cross-section, but the size and cost of the transformer are increased. The energy lost in both copper and iron is converted to heat, and the total loss must be kept within definite limits to prevent overheating of the transformer.

The three main types of transformer construction are shown diagrammatically in Fig. 32.

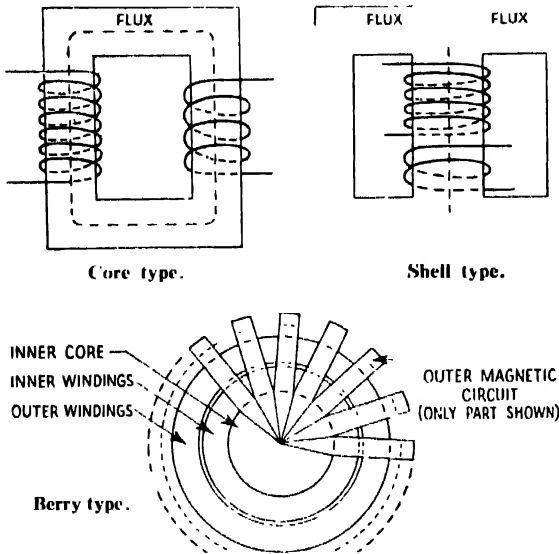


Fig. 32. The main types of transformer.

They are: the core type, which has a single magnetic circuit; the shell type, in which the core divides into two to complete the circuit; and the berry type, in which the magnetic circuit is completed from end to end of the core by a number of paths which completely envelop the windings. As in those parts of motors and generators where the magnetic flux is constantly changing, the cores are built up of thin sheets of iron, insulated from each other, to reduce the loss from eddy currents.

These laminations lie in the direction of the magnetic lines of force, and the joints, in alternate layers, are staggered, so as to avoid the presence of gaps right through the cross section of the core. In small transformers the cores are normally rectangular; in larger units it is usual to make them approximately circular in section, because a circular core has the shortest perimeter for a given area and will therefore require the smallest quantity of copper for a given winding.

Two types of winding can be used, *cylindrical* or *sandwich*. In the first each winding is in the form

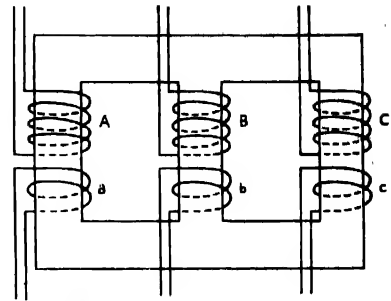


Fig. 33a. Three-phase transformer.

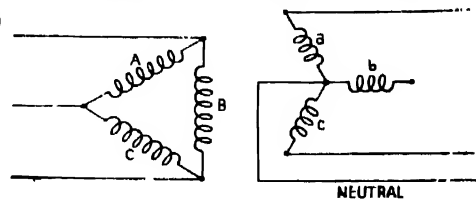


Fig. 33b. Connexion diagrams. The letters indicating the phases correspond with those in Fig. 33a.

of a cylinder, one fitting inside the other and over the core. In the second type the windings are split into a number of sections which are wound into the form of disks, or short cylinders, and these are stacked alternately (sandwich fashion) over the core.

Transformers can be used on single or multi-phase systems. In three-phase systems three separate single phase units can be used, but it is possible to combine these into a single unit with a consequent saving in cost and space. A diagrammatic arrangement of such a unit is shown in Fig. 33(a), and Fig. 33(b) shows the connexion diagram. The windings can be connected in star or mesh, but the arrangement most commonly used is to connect the input (*primary*) in mesh and the output (*secondary*) in star (Fig. 33b) to give a neutral point which can be earthed or to which a neutral lead can be connected for a four-wire distribution system. Other types include the Scott connected transformer. This

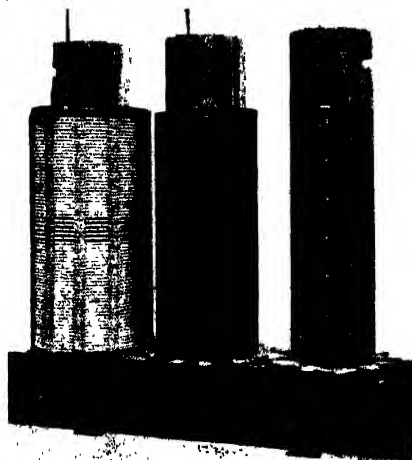


Fig. 34. TRANSFORMER CONSTRUCTION. A 66,000/22,000 volts three-phase transformer in process of construction.

was used extensively in the past to interconnect two-phase and three-phase circuits. As the two-phase system has disappeared the Scott is no longer used for this purpose, except to supply two-phase lighting load in some outlying districts. It is also used to a limited extent to supply two-phase current for some electric furnaces.

The auto-transformer is one in which the primary and secondary form a common winding. It is used chiefly in starters for induction and synchronous motors, for reducing line voltage during the starting period. In spite of the simplicity of this type of transformer it is used only for special applications, where its peculiar properties are required, as it suffers from the disadvantage that the windings are not electrically separate.

A large three-phase transformer in course of construction is shown in Fig. 34. The three phases are shown at different stages of construction: first, the iron core alone; second, the low voltage winding surrounding the core; third, the high voltage winding which is placed over and around the low voltage winding. The outer windings are separated by distance pieces; the object of this is to facilitate the easy flow of the cooling medium around and over the windings.

In small transformers the quantity of heat generated is usually so small that it is easily disposed of by radiation to the atmosphere. But for the large sizes shown in Fig. 34 it is necessary to provide some positive method of cooling. A blast of cooling air is sometimes blown over the windings; but more often the transformer is immersed in oil, which circulates around the winding and then passes through

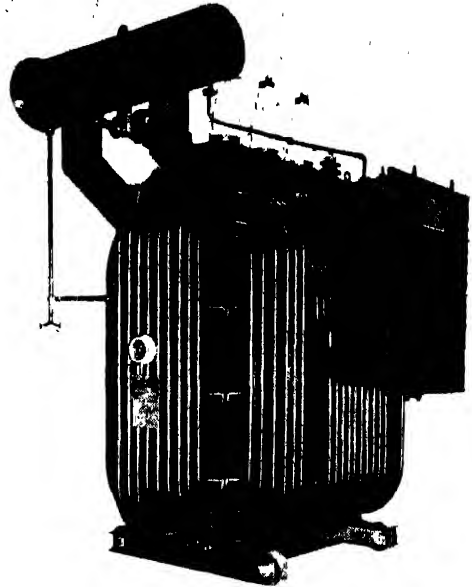


Fig. 35. POWER TRANSFORMER. Outdoor 2,000 kVA three-phase transformer for use on grid circuits. Ratio 33,000/11,000 volts. Note external oil circulating tubes and oil expansion cylinder.

Johnson & Phillips, Ltd

some cooling device. A typical oil-cooled transformer is shown in Fig. 35. The transformer is immersed in oil inside the tank, and the heat given up to the oil is radiated from the external tubes through which the oil circulates.

LESSON 10

The Conversion of A.C. to D.C.

If electricity is required for lighting or heating, alternating current and direct current are equally suitable; but if required for driving a motor, then the nature of the work the motor has to do must be taken into account. It may happen that the transmission and the application of the electricity may conflict as regards the suitability of alternating or direct current.

Converters

But there is no need to forgo the advantages of either type of supply, because the current can be converted from alternating to direct, or from direct to alternating. As alternating current is generally used for transmission, the conversion is usually from alternating to direct current. The machines used are called converters.

The conversion from one type of current to

another can be carried out with two machines coupled together. For converting alternating to direct current, an alternating current motor can be supplied with power from the transmission line and arranged to drive a direct current generator. In this case two complete machines would be required, each having its own armature and field windings. The arrangement can be simplified, and the cost reduced, by combining the two machines into one, with only one field system and one armature winding.

In the Lessons dealing with the generation of direct current and alternating current it was pointed out that the underlying principle is the same in both cases. A revolving conductor has alternating current generated in it as it rotates between the north and south poles of the field magnet. When the conductors are connected

to slip-rings on the shaft, the alternating current can be taken off for use in the external circuit; when the slip-rings are replaced by a commutator, a continuous current will flow in the external circuit. In the rotary converter the armature conductors are connected to slip-rings at one end of the shaft and to a commutator at the other end. When alternating current is supplied to the slip-rings, the armature rotates and direct current is available at the commutator brushes.

In general appearance the rotary converter closely resembles a direct current generator. The armature winding, the field coils, and the commutator are the same as in the direct current generator or dynamo. But instead of an engine supplying mechanical power, the converter has slip-rings for the application of electrical power. The converter is reversible in its action; that is, if direct current be supplied to the commutator end of the machine, alternating current will be generated at the slip-rings.

A typical armature for a rotary converter is shown in Fig. 36, the commutator is on the left-hand end of the shaft, the slip-rings on the right. This type of machine has the disadvantage that the direct current voltage has a fixed relationship to the alternating current supply voltage.

Motor Converter

The motor converter consists of an alternating

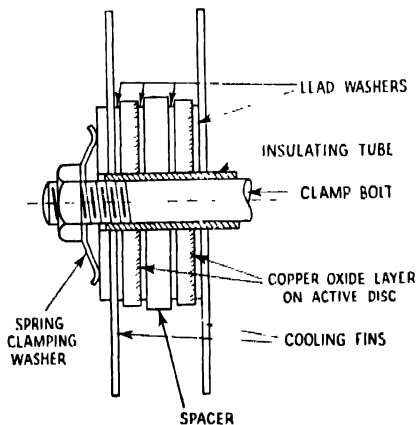


Fig. 39. Construction of copper oxide rectifier.

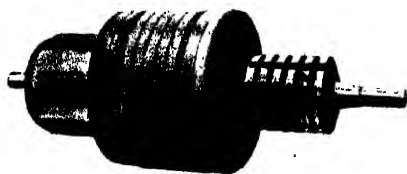


Fig. 36, left. Armature of tap-started rotary converter.

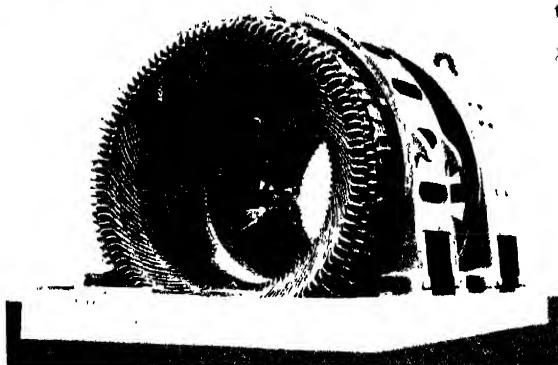


Fig. 37, below. Stator of a large motor converter.

General Electric Co., Ltd



Fig. 38. Armature and rotor of the motor converter at Fig. 37 (considerably reduced in scale).

current induction motor directly coupled to a direct current generator. In addition to the mechanical connexion between the two machines, there is electrical connexion between the rotor of the induction motor and the armature of the direct current generator. Part of the energy supplied to the induction motor is converted to mechanical energy and is used to drive the direct current machine as a generator. The remainder of the energy passes directly from the rotor of the induction motor to the armature of the other machine, and is converted to direct current at the commutator. In respect of this latter part of the energy the set acts as a rotary converter. The construction of the motor converter is illustrated in Figs. 37 and 38.

Fig. 37 shows the stationary part of the combined machine. The stator of the alternating current motor is seen at the near end, and the field magnets of the direct current generator are behind.

The combined rotor and armature is shown in Fig. 38; the direct current armature and the commutator are on the left, the alternating current rotor and the slip-rings on the right. The cooling fan is in the centre.

In general, the rotary converter and the motor converter are similar in their operation. The rotary converter is simpler in construction and is generally more efficient than the motor

converter. The latter has the advantage that in design the output voltage is not fixed by the input.

Rectifiers

A rectifier is a stationary piece of equipment which converts alternating current to direct current. The simplest example is perhaps the crystal and cat's whisker of the old days of radio; but it is of little interest

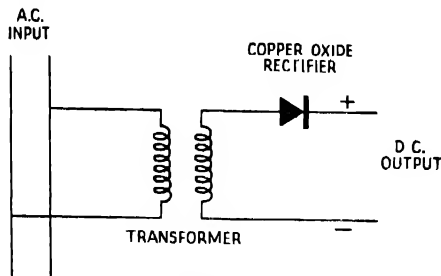


Fig. 40a. Half-wave rectifier circuit.

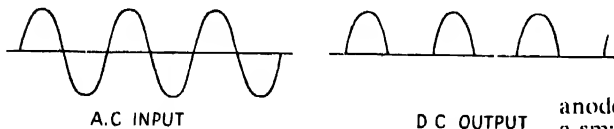


Fig. 40b. Half-wave rectifier output.

to the engineer, because it is capable of handling only very small powers. The simplest unit of practical use is the copper-oxide rectifier; this uses that property of a copper oxide film which allows an electric current to flow from the oxide to the copper, but which offers high resistance to the flow of current in the reverse direction. Such a unit is shown in Fig. 39. Copper disks, on which an oxide film has been formed on one face by heat treatment, are spaced apart by lead washers, to give good electrical contact with the oxide film, and cooling fins. Rectifiers of this type are used for a variety of purposes, including the supply of direct current for cinema arc lamps, battery chargers, etc.

The efficiency of the copper oxide rectifier is low (70-80 per cent.) and it has poor voltage regulation characteristics, i.e. the voltage falls with increase in current. The hot-cathode rectifier is rather more expensive but does not suffer from these disadvantages. It consists of a glass bulb in which is enclosed a filament

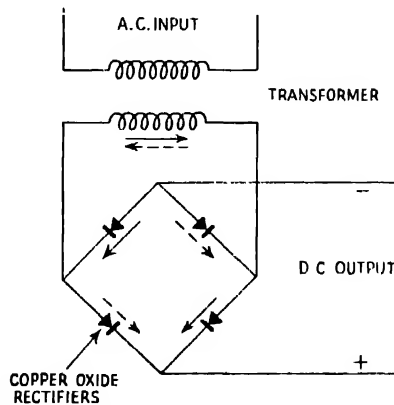


Fig. 41. Full-wave rectifier circuit using copper oxide rectifier.

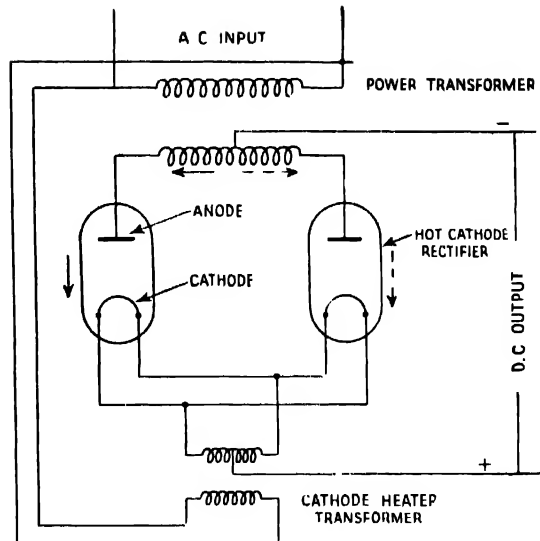


Fig. 42. Full-wave rectifier circuit using hot cathode rectifier.

called the cathode and a second element which is called the plate or anode (Fig 42). The air is evacuated and a small amount of mercury vapour is allowed to enter, after which the bulb is sealed. If a current is passed through the filament to cause it to be heated and connexions made to the anode and cathode, current will flow while the anode is positive but not while it is negative.

It will have been gathered from the foregoing that rectifiers are, in fact, automatic switching devices which will allow current to flow in one direction only. They can be connected in a variety of ways, the simplest arrangement being that of the half-wave rectifier, so called because only one half of the alternating current wave is used. This arrangement is shown in Fig. 40(a).

Fig. 40(b) shows the sinusoidal alternating current waveform and the waveform of the rectifier direct current output. The irregular shape and the low average value make this an uneconomical arrangement, seldom used except for low powers or in cheap equipment. When direct current is required from a single phase supply, *full-wave* rectification is normally used. Figs. 41 and 42 are typical full-wave rectifier circuits. Fig. 41 uses a simple transformer and four

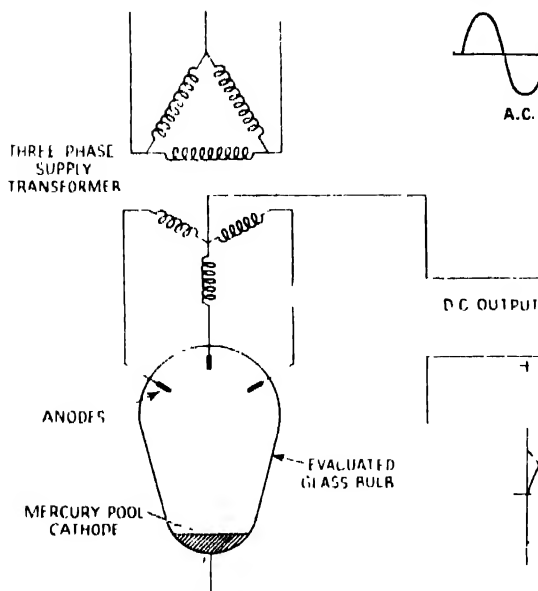


Fig. 44 Three-phase mercury arc circuit.

copper oxide rectifiers. The circuit Fig. 42 uses a split secondary transformer with two hot-cathode rectifiers. In both these circuits the full and dotted arrows indicate the flow of current during each half-cycle. It will be noticed that a second transformer is shown; this is to provide the cathode heating current. The graph Fig. 43 shows the waveform of the output from a full-wave rectifier; the improvement as compared with half-wave rectification is apparent.

Mercury Arc Rectifiers

While the rectifiers already described can be arranged to accept three-phase current, for power supply the mercury arc rectifier stands supreme. Fig. 44 shows diagrammatically a three-phase unit. It consists of a highly evacuated glass bulb containing in the bottom a pool of mercury, which forms the cathode, and three cast iron or graphite anodes connected to the input transformer secondary. The action is similar to that of the hot-cathode rectifier. The current passes in the form of an arc from the anodes to the cathode; as it will pass only in the one direction, the arc is from each anode in turn as the alternating current E.M.F. at the particular anode is positive. The direct current load is taken from the cathode and the centre tap of the transformer.

Chief Advantages

A device called an igniter (not shown in the diagram) is provided to start the arc; once in operation it passes from anode to anode,

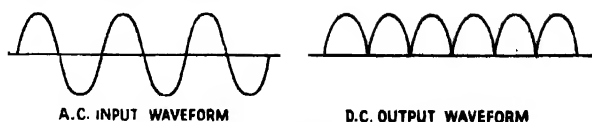


Fig. 43. Full-wave rectifier output.

and does not become extinguished. The mercury as it is vaporised condenses on the walls of the bulb and trickles back, so that no wastage of the cathode takes place. The output waveform is shown by the graph, Fig. 45.

If the anodes became too hot, the rectifier would fail; the glass bulbs are therefore cooled by fans, but for large outputs, above about 500 amperes, a steel tank replaces the glass bulb. Fig. 46 is an illustration of a large

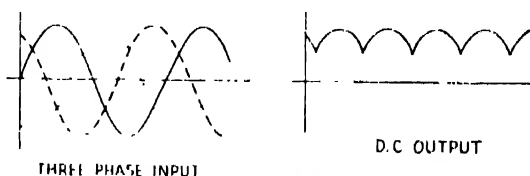


Fig. 45. Three-phase rectifier output.

six-phase rectifier. Large units are normally six-phase, because the greater the number of phases the smoother is the direct-current output.

The chief advantages of the mercury arc rectifier over other forms of converting machinery are high efficiency, low maintenance, and large short-term overload capacity. There is no wear, no need for heavy foundations, and it is particularly suitable for remote operation. These and other advantages have led to its extensive application; units with rating up to 2,000 kW at 600 volts and 600 kW at 20,000 volts have been built.

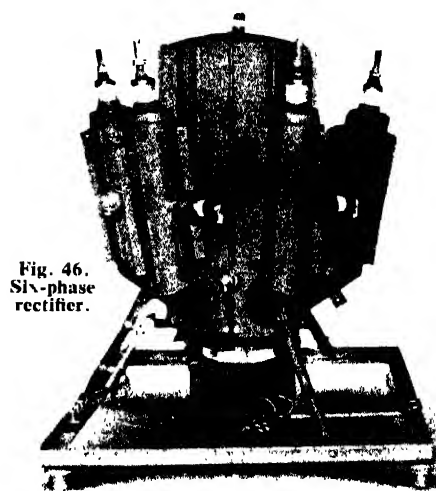


Fig. 46. Six-phase rectifier.

LESSON 11

Generation, Transmission, and Distribution

IN the early days of the development of electrical power, standardisation of voltage was unheard of and there was little co-operation between the various supply companies. With the rapid growth of the use of electrical power during the early part of the 20th century, the disadvantages of this haphazard state of affairs became increasingly apparent, forcing co-operation between the supply companies, or government action, and to-day there are few countries in which the supply of electrical power is not a complex integrated system covering the whole country and operating at standard voltage and frequency.

To appreciate the advantages of a system of interconnected stations it is necessary to consider the conditions of operation of an isolated station. In any district served by such a station the demand for electricity varies from hour to hour, and fluctuates between wide limits. The maximum demand may well be of the order of twice the average load taken over the whole day. The maximum daily load will itself fluctuate from day to day, and may be much greater at one season of the year than at another.

The actual nature and extent of this fluctuation in the demand on a station depends upon the nature of the load, whether for industrial or domestic purposes, but in all cases the station must be designed to meet the maximum. This means that for comparatively long periods a large proportion of the available plant is not working to its full capacity, and is therefore at less than its maximum efficiency.

Also, in an isolated station a considerable quantity of spare machinery must be installed in case of a breakdown of the main plant. It has been proved conclusively that even when working under its best conditions a small station cannot operate as efficiently as a large station; large units are more economical and more efficient.

Interconnected Systems

The advantages of an interconnected system of generation and distribution can be given under four heads.

(1) A comparatively small number of very large central stations can be used, with consequent economy in first cost.

(2) It is not necessary to provide such a large proportion of stand-by machinery as in an isolated station, because in the event of a breakdown of the generating plant a supply can be obtained from the station to which it is connected. A bigger proportion of the capital invested in the plant is thus used productively.

(3) In many districts, owing to the varying demands of the industries, the times at which the peak loads occur will be different. In such cases it is not necessary for each station to be able to meet its peak load, as a supply will be available from other stations which have a surplus of energy at that time. Thus a smaller total quantity of plant is required, it is operated nearer its maximum capacity, and is therefore nearer its maximum efficiency.

(4) The sites for new stations can be chosen with reference to the available supplies of fuel and water, and are not so much dependent upon local boundaries. Also, the country's natural resources of water power can be used to their maximum capacity by supplying power to the transmission network.

In considering a modern generating system and transmission network it is convenient to divide it into three sections, as follows:

- (1) Generation.
- (2) The transmission system that links the various power stations to the sub-stations.
- (3) The distribution network to which the consumers are connected.

The usual values of generation voltages are 6,600 or 11,000, and sometimes 33,000 volts.

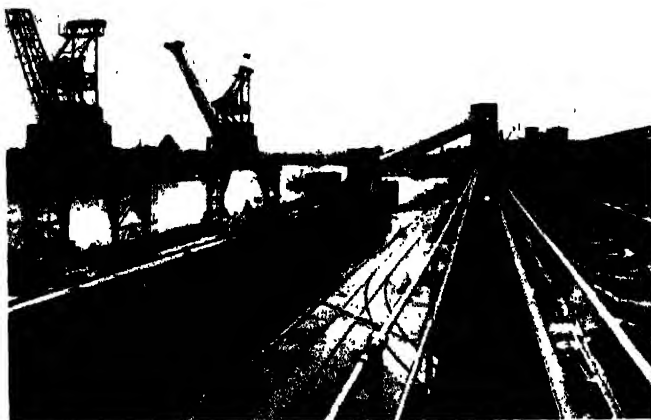


Fig. 47. COALING JETTY. By means of hoppers and endless-belt conveyors coal is taken from river barges at Battersea coal stores, whence other conveyors take it to the furnaces.

Courtesy of C.E.A.



Fig. 48. The Kirkstall (Leeds) station of the Central Electricity Authority. Two cooling towers are seen on the right. These are massive chimneys of reinforced concrete, down the inside of which the water from the power house condensers is allowed to fall in the form of a spray.

From "Turbine Lubrication," C. C. Wakefield & Co., Ltd.

In Great Britain three-phase 50 cycles per second has been standardised. In the U.S.A. a frequency of 60 c.p.s. has been adopted. Atomic energy will no doubt revolutionise the electrical supply industry, but at this stage power stations can be divided into two groups, under the headings of thermal and hydro-electric. The choice of the type of power depends entirely on the natural resources of the country in which they are built. In the U.K., with large, though rapidly dwindling, coal resources, it is natural that most of the power is produced by turbo-alternators from coal-fired boilers; only a small proportion is

obtained from hydro-electric stations, situated in Scotland. In mountainous countries such as Norway, Sweden, and Switzerland hydro-electric power is both abundant and cheap.

Siting of Thermal Power Stations

A modern thermal power station costs several million pounds to build and equip, and it will require possibly 90 tons of coal and 40,000 tons of cooling water an hour. It should be located reasonably near to the area to which it will supply power, on a site suitable for the very heavy foundations needed for the turbo-alternators, and where economical transport



Fig. 49. B.T.H. turbo-alternators at the Barking power station of the Central Electricity Authority. This is the largest power station in Europe. It was built to supply power for London and south-east England generally.

From "Turbine Lubrication," C. C. Wakefield & Co., Ltd.



Fig. 50. Alrance hydro-electric power station, with generating capacity of 11,500 kW. It serves the Paris district, furnishing current during periods of peak demand and in emergency.

facilities can be provided for the supply of coal. In England, the Barking and Battersea power stations are excellent examples of modern practice. Both were built to supply power for London and the south-east. They are sited on the banks of the Thames, and all coal can be transported by water (Fig. 47), and there is an adequate supply of cooling water. On other sites where this vast quantity of cooling water is not available it is necessary to build cooling towers. These are massive chimneys of reinforced concrete standing over a pool of water. The water from the power house condensers is allowed to fall in the form of a spray down the inside of the tower. As it falls it gives up heat to the rising column of air. In spite of the fact that the same water is recirculated continuously, evaporation losses are such that there is still a considerable demand for water. The size of these towers can be judged by reference to Fig. 48, which shows the Kirkstall station of the Central Electricity Authority (C.E.A.); two cooling towers can be seen to the right of the station. Fig. 49 shows B.T.H. turbo-alternators installed in the Barking power station, the largest power station in Europe (1957).

Peak Loads and Emergencies

Gas-turbine-driven alternators, now installed in a number of stations, are specially suitable to take care of peak loads, and in emergency, as they can be started and put on full load in a few minutes; whereas it may take several hours to raise steam and accept full load on the normal turbo-alternator.

Hydro-electric power stations must, of course, be situated close to the source of power; they are often built into the foot of the dam that

impounds their water supply. Fig. 50 shows the Alrance power station, and Fig. 51 the turbine hall of the Pouget station. Both of these hydro-electric power stations are part of the Aveyron system of Electricité de France. This system is designed to serve the Paris district as stand-by and to furnish current during periods of peak demand. It is an important feature of hydro-electric stations that they can accept loads at very short notice. In the event of failure of the Paris network this new system can take over the load and re-establish power within 30 seconds.

Transmission

Throughout the world high-voltage three-phase alternating current has been adopted as most suitable for the transmission of power. There are certain features which make high voltage D.C. more desirable, but the ease with which alternating current can be transformed more than outweighs its disadvantages. As the transmission voltage is increased, the size of the conductor required is reduced, but it must be remembered that at the same time the increase in voltage increases the cost and weight of the insulators.

Hence for a set of conditions there is but one economical voltage. As a very rough guide a figure of 1,000 volts per mile may be assumed, and thus for a line 100 miles in length a voltage of 100,000 would be ideal. It would be uneconomical to apply this rule to every

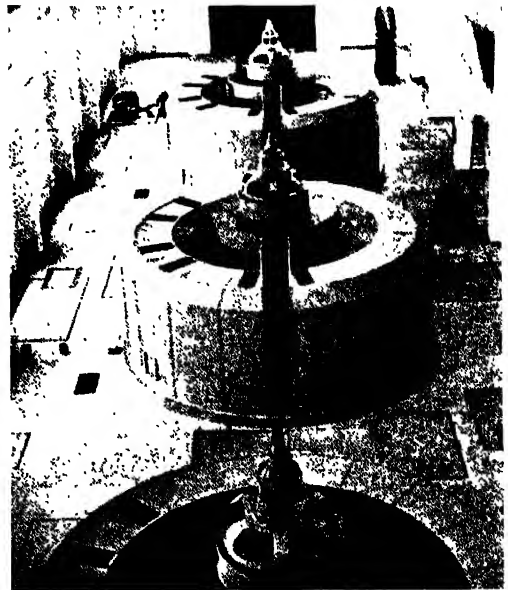


Fig. 51. Turbine hall of the Pouget power station, showing three turbo-alternators.

Both illustrations in this page are from "Esso Oilways," reproduced by permission of the Esso Petroleum Co., Ltd

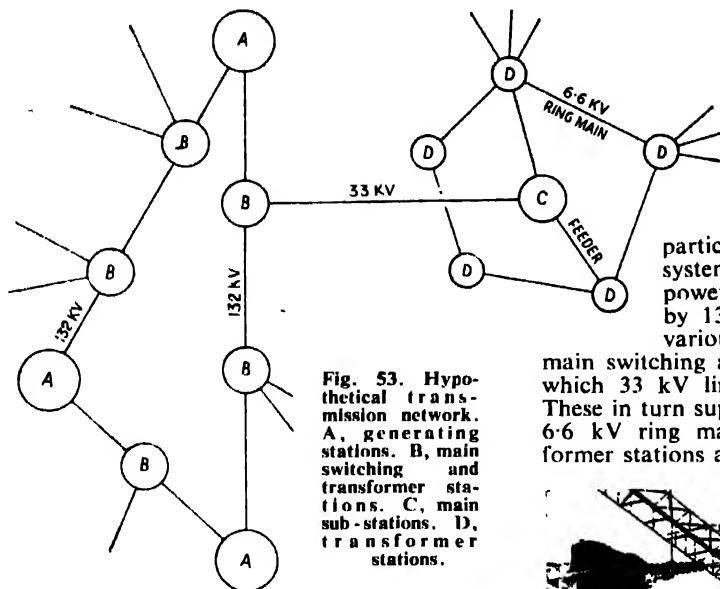


Fig. 53. Hypothetical transmission network. A, generating stations. B, main switching and transformer stations. C, main sub-stations. D, transformer stations.

transmission line, as it would result in a vast number of different voltage transformers, switchgear, insulators, etc. Therefore a number of standard voltages have been selected which take into account the balance between the best voltage, and standardisation of equipment. In Great Britain these are :

Main transmission lines	132,000 volts
	66,000 volts
Secondary transmission lines	33,000 volts
	11,000 volts

The voltage is, in each case, that existing between the lines of the three-phase system. The voltage to earth will be $1/\sqrt{3}$ of the values given.

Fig. 52 shows in diagrammatic form the links in the chain between the generating station and the consumer. The generated voltage is raised by a transformer to the main transmission voltage (132 kV). At convenient points it is stepped down, first to the secondary transmission voltage (33 kV), next to the main

distribution voltage (6.6 kV), and finally to the consumer voltage (400/230 volts).

Fig. 52 shows a single circuit; the ring system is used whenever possible because it can offer greater protection against failure due to breakdown of any

particular section. A hypothetical system is shown in Fig. 53. Three power stations are interconnected by 132 kV transmission lines. At various points these lines supply main switching and transformer stations from which 33 kV lines supply main sub-stations. These in turn supply, via two or more feeders, 6.6 kV ring mains. Where required, transformer stations are fed from the ring main to



Fig. 54. Circuit breakers at an outdoor sub-station in Norway serving an aluminum melting plant.

From "Esso Oilways," by permission of the Esso Petroleum Co., Ltd.

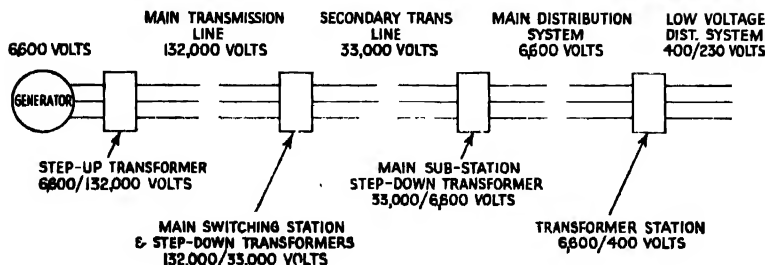


Fig. 52 (left). Diagrammatic representation of a large transmission system.

supply the local consumer load. Each section of the network is protected by circuit breakers (Fig. 54); these are large switches designed to break the circuit should the current exceed a predetermined value. With this arrangement a failure can be isolated, power being maintained to the remainder of the system, and only those consumers connected to that particular section suffering a power cut.

Continuity of supply is an important feature of a modern system. Failure of supply might have very dire consequences. In certain industrial processes failure for only a short time may result in complete shut down of the plant for several weeks. In some cases, e.g. hospitals, where the load is relatively small, it is possible to provide emergency generating equipment; but where the load is large, as in the production of aluminium, emergency supply has to be considered as part of the main supply system.

Transmission is generally by overhead lines suspended from steel or concrete pylons. Two examples are illustrated. Fig. 55 shows a pylon on the side of a mountain in Norway. Fig. 56 shows the two pylons that support the 132 kV transmission line that crosses the river Thames; they are 487 feet high and the span is 3,060 feet. The conductors are suspended from the pylons via heavy porcelain insulators. They are usually of steel-cored aluminium. For a given current-carrying capacity these are larger than copper conductors, but the increased mechanical

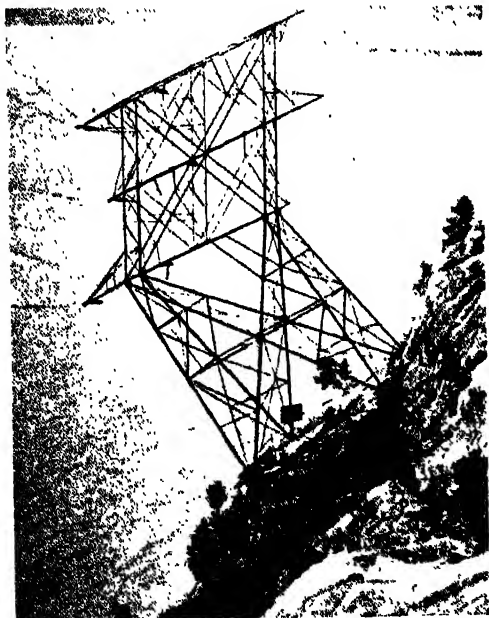


Fig. 55. A pylon on the side of a mountain in Norway.

From "Esso Oilways," by permission of the Esso Petroleum Co., Ltd.

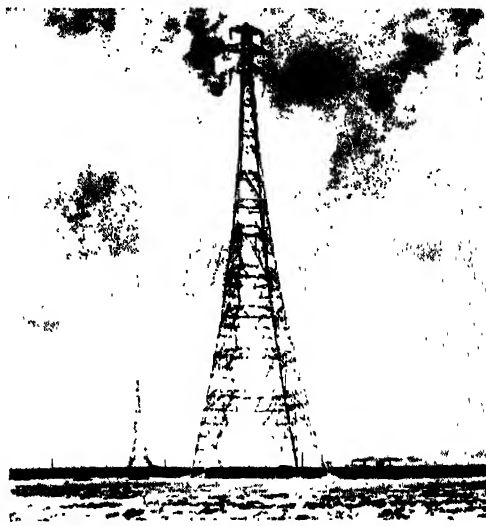


Fig. 56. The two pylons that support the 132 kV transmission line that crosses the river Thames.

Courtesy of British Insulated Callender's Cables, Ltd.

strength of the core makes it possible for much larger spans to be used. This reduces the number of towers required and therefore the risk of breakdown, since each insulator is a potential source of failure.

Underground transmission cables have the advantage that they are less susceptible to the effects of weather and lightning, but faults are more difficult to locate and repair. They are used of necessity in heavily populated areas. But for voltages of 33 kV and higher they require very special construction and the cost is sometimes prohibitive.

In the power supply system so far considered we have dealt principally with the transmission of electricity. Of equal importance and perhaps of even greater complexity is the distribution network—that is, that part of the system that interconnects the consumer and the transmission system. It is difficult to define clearly where transmission ends and distribution begins, but 6.6 kV lines and lower can be classed as distribution.

In Fig. 53 the 33 kV secondary transmission line is shown terminating at C, a main substation, where transformers step down the voltage to 11 or 6.6 kV, a value suitable for the feeders that supply, either direct or via step-down transformers, the 6.6 kV ring-main. At convenient points on the ring-main are situated transformer kiosks connected as shown in Fig. 57. The secondary winding of the low voltage distribution transformer is star connected and four leads brought out, one from the neutral point and one from each of the phases.

Heating and lighting circuits are connected

between line and neutral and supplied at phase voltage (230 volts), while power loads are connected between the lines and supplied at line voltage (400 volts). Power loads consisting chiefly of three-phase motors are inherently balanced; the single-phase loads are spread as equally as possible between the three phases. The neutral line is earthed at the transformer, therefore the maximum voltage between any line and earth is 230, but it should be noted that a maximum of 325 volts is reached twice per cycle. For this reason the danger of shock from an A.C. supply is greater than from a D.C. supply of the same declared voltage.

To complete this lesson on transmission and distribution, reference must be made to the grid system covering a large area of Great Britain with transmission lines that handle the power supply and interlink the various power stations. The electricity supply industry was reorganized and brought under public ownership in 1948. The ownership and operation of the power stations and the national grid and control of policy was then assumed by a central authority, called the British Electricity Authority, under which 14 area boards became responsible

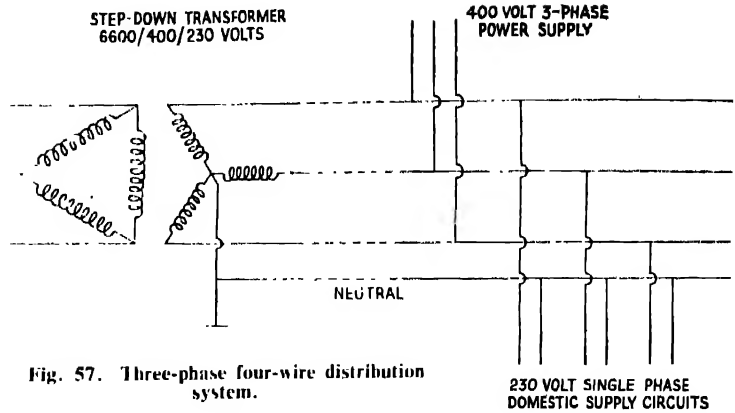


Fig. 57. Three-phase four-wire distribution system.

for the distribution and sale of electricity. The district covered by the north of Scotland hydro-electricity board (1943) was excluded from this arrangement, two of the 14 area boards were subsequently taken over by the south of Scotland electricity board (1954-55), and the name British Electricity Authority was changed to Central Electricity Authority. The loading room of one of the control centres of the C.E.A. is shown in Fig. 58.

BOOK LIST

Electricity and Magnetism, and Applied Electricity, A. W. Hirst (Blackie & Sons, Ltd.); *Electrical Technology*, H. Cotton (Pitman); *Generation, Transmission and Utilisation of Electrical Power*, A. I. Starr (Pitman); *Transmission Lines*, F. C. DeWeese (McGraw Hill); *Technical Electricity*, J. Phillips & R. Stephens (Technical Press); *The Electrical Encyclopedia*, S. G. B. Stubbs (Waverley Book Co)



Fig. 58. Loading room of the Thames North Control Centre, C.E.A., in London.

RUSSIAN

THIS Course represents a new approach to the study of Russian— one which simplifies the first trying days and makes the learner realise that the language is not nearly so formidable as he had imagined. It is, in effect, a first approximation to a basic Russian. If this Course is carefully followed, the student should be able to read normal Russian in about six months, and as he progresses he will find the language flexible, rich, and altogether delightful.

Courses on other modern foreign languages will be found in Vol. 2 (FRENCH), Vol. 3 (GERMAN), Vol. 4 (ITALIAN and SPANISH), and this volume (PORTUGUESE). The Course on PHILOLOGY, which is complementary to the study of all languages, is in the present volume.

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BY special arrangement with the Orthological Institute of Cambridge, and in collaboration with its editor, Mr. Charles Duff, each of the six Courses in French, German, Italian, Spanish, Portuguese, and Russian has been expressly prepared for PRACTICAL KNOWLEDGE FOR ALL from the respective handbooks and readers issued in pocket volumes for the Institute by Messrs. Nelson & Sons, Edinburgh and London. The copyright of these Courses is strictly reserved by the Orthological Institute of Cambridge.

LESSON 1

Alphabet and Pronunciation

MORE people in Britain begin to learn Russian and, after a very few months or weeks abandon the study, than is the case with any other language. One can hardly fail to notice how many people are heard saying, "I should like to learn Russian, but it is far too difficult for me" or "That Russian alphabet puts me off—I could never learn it."

All this is both a pity and somewhat unrelated to the truth, though partly justified because of the traditional approach to this delightful, remarkable and by no means formidable language. There has been an entirely wrong approach to Russian—wrong from the outset of study, wrong from the very moment the alphabet is approached. The complete Russian alphabet, including the letters abolished in 1918, consists of 36 letters. As all books printed before 1918 use the full alphabet, if pre-revolution literature is to be read the 36 letters must be known. Then, while still in the first days of study, if the learner is informed that, in addition to the *ordinary* alphabet, there are *italic* and *script* alphabets to be learnt, in which many letters differ from those of the ordinary alphabet, he sees himself confronted with the task of learning dozens of strange letters before he can get down to the language itself. No wonder so many people soon give up in despair!

One Normal Alphabet. In this Course, this entirely unnecessary obstacle is avoided by an approach which is completely logical and consistent, one which simplifies those first trying days of study to a surprising degree—so much so that hundreds of learners who have used it have been known to master the Russian alphabet in an hour or so. The approach is this: you learn *one* normal alphabet, that which is used for 90 per cent. of all printed matter. For a beginning, both italic and script alphabets are avoided—they can be learnt at the end of the Course (see p. 2551), when the student knows something of the language; and then they are learnt at one sitting.

All through the Course, when anything has to be written by the learner, he just prints it out in block letters, thus

МОСКВА ~ Moscow

This method serves a double purpose. First, the learner quickly becomes familiar

with the alphabet in common use; second, writing a word out in block letters impresses it on his memory in the form in which it will nearly always be met. When a learner has mastered the values of the letters and their pronunciation, he does not have to write

МОСКВА (pronounced *mosskva*)

many times in block letters before the whole word is impressed on his visual memory so strongly that he takes it all in every time he meets it in print. And so on with every new word he meets. This is a wonderful short-cut to learning, and the learner soon realizes that Russian is not nearly so terrifying as he had imagined.

The Cyrillic Alphabet. Examine now the Russian alphabet. It is called the Cyrillic alphabet after its inventor St. Cyril, a learned monk of the 9th century, who made it up from the Greek and Latin alphabets—with the addition of some characters for sounds not in those languages. The full alphabet to-day (see p. 2500) consists of 36 letters. Of these—

5 are pre-1918 and need not be learnt immediately

11 are the same as ours

8 resemble our letters but have different values

12 differ from ours entirely, and include letters which we have not.

So it is seen that there are 16 letters -- those which are the same, and the pre-1918 letters --or half the alphabet which causes no trouble at all.

What the beginner must first learn are the 8 letters resembling ours but having different values; and the 12 entirely different letters. Here are the 8:

Russian English equivalent

В	=	V
Н	=	N
Р	=	R
С	=	S
Х	=	ch guttural (Scotch loch)
Ы	=	i, a sound peculiar to Russian
Ь	=	marks a soft, or palatised consonant (dealt with later)
Ѣ	=	e, like French é, pronounced ay

the last three are printed thus in Russian Ы Ѣ Ъ,

Why learn these first? Because, really, they are liable to be a little confusing at first, and it is best to

Ы Ѣ Ъ

clear away any possibility of confusion before we come to the 12 entirely different letters. Here they are:

Russian	English equivalent
(1) Гг ,	g in <i>get</i> or <i>give</i> , never like g in <i>gem</i>
(2) Жж ,	ʒ in <i>pleasure</i> , or French /
(3) Ии ,	e like <i>ee</i> in <i>feet</i>
(4) Лл ,	
(5) Пп ,	p
(6) Фф ,	f
(7) Цц ,	ts in <i>bits</i>
(8) Чч ,	ch in <i>church</i>
(9) Шш ,	sh in <i>ship</i>
(10) Щщ ,	shch in <i>Ashchurch</i>
(11) Юю ,	iu, the u sound in <i>mute</i>
(12) Яя ,	ia, the ya sound in <i>yam</i>

Now, you can see why МОСКВА is pronounced *mooskva* and you know that the Russian СССР, the abbreviation for Union of Soviet Socialist Republics, is really СССР in our letters, and that РЕСТОРАН when transliterated into our alphabet makes the word *restoran*, meaning restaurant. Here, you realize that, although the Russian word *looks* very strange to one—if one does not know the alphabet—when *spoken* it is very similar to our own. And you may well say to yourself with some pleasure: "Russian is not so difficult after all!"

Take a piece of paper and print out these letters in simple block letters with their equivalents a few times. Then, you may for practice use the following Russian alphabet. Exercise your memory on it, until you know the equivalent English for every Russian letter.

РУССКИЙ АЛФАВИТ

а б в г д е ж з и й к
л м н о п р с т у ф х
ц ч ш щ ъ ы ь э ю я

You will see that the fifth letter from the left on the last line is one of those abolished in 1918. The Boyanus and Müller Russian-English Dictionary, a popular and useful modern dictionary printed and published by the State Publishing House in Moscow, has included it for reasons we shall state later. It is letter 28 of the full alphabet, given in page 2500.

You need not wait until you think you know all these letters perfectly before proceeding to the "Remarks on Pronunciation of Vowels" (p. 2501). When you know them moderately, you may then tackle basic values of the letters, given in page 2500.

You will very soon notice that the Cyrillic alphabet is admirably conceived for Russian; and economical. If you write out in English letters the phonetic equivalent of almost any Russian word, you will notice that it is longer and stranger than the Russian original. (Written and italic Russian letters are given in p. 2551.)

Russian and Other Languages. Having made this simplified approach to Russian and, by this time, realized that it is not so formidable a language as you may have imagined, your confidence may be further strengthened by considering its difficulty compared with that of other languages. It is easier to pronounce than either French or Portuguese; and far easier to "catch" in conversation. It is easier to construe than German—you may put words in almost any order in Russian and the grammar is not impaired. As for reaching a reading knowledge, this can be achieved with very little more effort than is necessary in Latin or Greek. There are European languages much more difficult: Finnish, Hungarian and Basque, for example, or even Welsh, or Erse.

In the U.S.S.R. thousands of non-Russian-speaking peoples learn it every year, some of them so well as to produce literature in it. While we make no pretence that it is an easy language—no language is easy—what we wish to impress on you is that, if this course is carefully studied, in six months you will be reading normal Russian. A speaking knowledge is a matter of practice, and for this a native speaker is desirable for the first lesson or so, until the pronunciation is mastered. There are only three sounds in Russian which need cause any difficulty.

This Course provides the essential raw material of the language. Learn all of it. Learn ten new words from the vocabulary every day. Keep a notebook. After a month, get a Reader—though not essential, it will help. The *Basics and Essentials Russian Reader*, by A. M. Krougliakov, or the *First Russian Reader*, by Anna Semeonov, can be recommended. Try to master one column and ten new words every day. At that rate you will make good progress.

Letters	Names in Russian	Equivalents in English letters and pronunciation	Examples
1 А, а	ah	a in father	Баба—peasant woman
2 Б, б	bay	b in bit	
3 В, в	vay	v in vat	Вот—here
4 Г, г	gay	g in get, give	Губа lip
5 Д, д	day	d in day, do	Да—yes
6 Е, е	yay	ye' in yet, ye'llow (b accented is like yaw in yawl)	Дед grand-father
7 Ж, ж	zhay	s in measure, z in azure (Exactly like French j in jardin)	Жена—wife
8 З, з	zay	zz in buzz, s in rose	За for
9 И, и	ee	ee in feel, i in machine	Или or
10 Й, й	ee kratkoye	short, that is, like i in boil ' (kratkoye means 'short') Used only to follow another vowel forming a diphthong	Толстой—Tolstoi
11 І, і	ee s' tochkoy	i in machine (точкой means with a dot)	Приезд arrival (old spelling)
12 К, к	kah	k in kite	Как—how
13 Л, л	ell	a hard sound like ll in mill	Лампа—lamp
14 М, м	emm	m in man, mouse	Мама—mama
15 Н, н	enn	n in not, night	Но—but
16 О, о	oh	o in not Often sounds like a short a	Он he
17 П, п	pay	p in pit, pin	Папа—papa
18 Р, р	airr	r in road, but slightly thrilled	Рот—mouth
19 С, с	ess	s in some, soon. Never like s in rose	Сын—son
20 Т, т	tay	t in tin, tough	Там—there
21 У, у	ooh	oo in moon, u in rule	Гыт—here
22 Ф, ф	eff	f in fit	Фут—foot
23 Х, х	hhah	hstrongly aspirated. (Like Scotch ch in Loch, Irish lough; or German ch in Dach; exactly like Spanish jota)	Хороший—good
24 Ц, ц	tsay	ts in bits, wits.	Царь—Tsar
25 Ч, ч	chay	ch in chain, china	Чай—tea
26 Ш, ш	shah	sh in ship, smash	Шерсть—wool
27 Щ, щ	shchah	This is one sound—like sht plus ch in smasht-china said quickly Or shch in Ashchurch Practise these two English expressions	Щека—cheek
28 Ъ, ъ	tyvordi znak	'hard' sign (твёрдый знак) which makes the preceding consonant hard	Шум—noise
29 Ы, ы	yerrwee	a sound peculiar to Russian, for which the nearest English equivalent is the short i in sin pronounced with the teeth clenched	Сын—son
30 Ъ, ъ	myahki znak	'soft' sign (мягкий знак) makes the preceding consonant soft, that is as if a half-suppressed y sound came after it. maht'	Мать—mother
31 Ъ, ъ	yaht	ye in ye't	Есть—eat
32 Э, э	ay	ay in day, or e in fête	Этаж—storey
33 Ю, ю	yooh	u in useful, or you in yourself	Брюссель—Brussels
34 Я, я	yah	ya in yard, yam	Яма—pit
35 Ъ, ъ	feeta	f in fun, fight	} rarely used
36 Ъ, ъ	eezhitsa	i in mint, flint. Only to be found in older books	

Spanish ñ in Señor. But the 'softening' can occur after every Russian consonant (except r, ж, х,) and in the middle or end of a word. When ь occurs at the end of a word it may cause the foreigner some trouble.

Pr : maty (almost match) ^{МАТЬ} mother Pr : dat' to give ^{ДАТЬ}

-ba is a common termination of verbs. (Pr: vaht').

REMARKS ON CERTAIN CONSONANTS.

The equivalents given in the table of the alphabet have few exceptions. The following should be noted:

кто (who) is pronounced as if written ктo; and ч before т is pronounced sh. что (what)—sh-to. Similarly ш before н is often sh. ложка (pr: losh'ka) a spoon; and щ before н like sh—Помощница (pomosh'neetsa), an assistant (f)

GENITIVE ENDINGS—ero AND ero

In genitive terminations the r takes the sound of English v. Thus: eró (his) is pronounced yev'ò мое́ро (of my) maybevo' старо́ (of the old) star'avo

STRESS OR ACCENTUATION

In every Russian word of more than one syllable there is always a syllable much more heavily stressed than the rest. It is very regrettable from the foreigner's point of view that there are no practical rules to help him to discover this stressed syllable. He must learn the pronunciation of each word as it occurs, and to this end we have marked every stressed syllable with a graphic accent ('). Books for Russians do not have this accent. The student will have no difficulty in finding accented texts, and he should keep to them, and to an accented dictionary, until he has become thoroughly familiar with the language.

The importance of stressing heavily the accented syllable can hardly be exaggerated—all other syllables

may be pronounced lightly, 'slid over,' providing the one with the stress is momentarily held.

GENERAL REMARKS ON PRONUNCIATION.

It should be clearly understood that the equivalents for pronunciation given above are, at best, makeshifts. Strictly, every letter or combination of letters in Russian represents a sound or sounds which have no exact equivalents in English. Good pronunciation can only be learnt from good native speakers, and they are not always easy to find. But if there is one European language for which a passable pronunciation can be learnt from a book, it is Russian; which is, on the whole, a language in which 'one letter represents one sound.' The apparently formidable alphabet is, in fact, very well conceived to meet the phonetic requirements of the language. The student who persists will in a short time realize how great a help¹ is this elaborate alphabet; especially if he has studied French, for example, in which orthography is of no help in so important a feature of the language as 'liaison,' or for silent letters and many other irregularities. The three most difficult Russian letters for the English speaker to pronounce are я (hard), ь (soft sign) and ш. Try to get somebody from Moscow to repeat them until you know them.

Here are some proper names in Russian characters, to assist in mastering the alphabet: ЛОНДОН, London. МАНЧЕСТР, Manchester. ОКСФОРД, Oxford. ЧЕЛСИ, Chelsea. ЛОЙД ДЖОРДЖ, Lloyd George. РАМЗЕЙ МАКДОНАЛЬД, Ramsay Macdonald. ТРОЦКИЙ, Trotsky. ТОЛСТОЙ, Tolstoy. ЛЕНИН, Lenin. БИВЕРБРУК, Beaverbrook. ЧЕРЧИЛ, Churchill. КЕНЗИНГТОН, Kensington. ГЛАСГО, Glasgow.

¹ Turn to any of the Russian words for which an English equivalent pronunciation is given, and it will be seen that the Russian original is the more concise.

LESSON 2

Declension and Nouns

Russian is what grammarians call a synthetic language. By this they mean that it prefers to make compound and derivative words and to use endings (or inflexions) rather than depend upon a liberal use of particles as in English, for example. Nouns, adjectives and pronouns change their endings to denote different shades of meaning, and this process is called Declension. Thus:

Баран, means a ram. Барана, .. of a ram.
Барану, . to a ram.

—and so on throughout six 'Cases' in the singular and the same in plural. These cases are:—

NOMINATIVE: names the Subject or Initiator of action or speech, and answers

2. GENITIVE

the question WHO? (КТО?) or WHAT? (ЧТО?)

Indicates the Possessor of something, and answers the question WHOSE? (ЧЬО?)¹ or OF WHAT? (ЧЕГО?)²

The Genitive plural is used after the word МНОГО—MANY, and after some other adverbs (p. 2520) МНОГО ДЕТЕЙ—many children literally many of children.

¹ Pronounce CHEVÓ.

² Pronounce KAVO.
3. DATIVE:

Indicates the Recipient of something, and answers the question TO WHOM (КОМУ?) or TO

- WHAT? (ЧЕМУ?).** This is the Indirect Object of action or speech.
- 4. ACCUSATIVE.** indicates the Direct Object—the person or thing immediately affected by the action answering the question *WHOM?* (КОМУ?) or *WHAT?* (ЧТО?)
- 5. INSTRUMENTAL.** as its name implies denotes the Instrument by which or with which the action is done, and answers the question *BY WHOM?* (ЧЕМ?), or *WITH WHAT?* (ЧЕМ?)
- 6. LOCATIVE** usually indicates the locality in which an action is done, and answers the question *WHERE?* *WHEREABOUTS?* (О КОМУ?—ABOUT WHOM? О ЧЕМ?—ABOUT WHAT) It is sometimes also called the Prepositional Case because it is always preceded by one of the prepositions—О, ОБ, ОГ, ABOUT, ПО—AFTER, В, ВО—IN, INTO, ПРИ—AT, NEAR, НА—ON, UPON. (See pages 2520-1.)

There is also a Vocative case but, except in a few ecclesiastical expletives, it is the same as the Nominative **БОЖЕ!** Oh GOD!—This is a Vocative.

It is impossible to make progress in Russian until the simple uses of these cases are understood. The Declension of adjectives and pronouns being regular can be learnt fairly quickly. That of nouns is not so easy, as there are irregularities. Comfort may be found in the thought that it is by no means unusual for Russians to trip up on the inflexions of nouns. Constant repetition is necessary. What is given in the pages which follow is a bare minimum. The *Tables of Inflections* should be thoroughly known; otherwise sense will not be made of even simple sentences.

NOUNS

"A Noun is a word used for naming some person or thing"—Nesfield.

ABSENCE OF WORDS FOR a AND the.

There are no words in Russian for the English definite and indefinite articles. Thus **АВТОМОБИЛЬ** may mean either the automobile or an automobile, according to context or what comes after. If it is desired to single out a special automobile, then some other word or words must be called in to make the meaning clear: one, this, that, such and such an automobile, here or there, etc.

GENDER.

Russian nouns are of one of three genders: masculine, feminine, neuter. But Russian genders do not coincide with the simple English usage of males, females and inanimate objects.

- (1) MASCULINE ARE:** Nouns denoting males, whatever their endings
Nouns ending in a *hard* consonant or —Я.
Nouns ending in —Ь and having their Genitive in —Я.
Proper names ending in —Ь.
Nouns ending in a hissing consonant: —Ж, —Ч, —Ш, —Щ
- (2) FEMININE ARE:** Nouns denoting females whatever their ending.
Most nouns denoting *abstract* qualities
Nouns ending in —А, or —Я.
Nouns ending in —Ь with Genitive in —И.
- (3) NEUTER ARE:** Nouns ending in —О, —Е, or

(1)	(2)	(3)
Thus: Masculine	Feminine	Neuter
Брат, brother	Мать, mother	Слово, word
Дядя, uncle	Книга, book	Общество, company
Случай, occasion	Линия, line	Условие, condition
День, day	Речь, speech	Имя, name
Корабль, ship	Вещь, thing	
	Честь, honour	

Hence the ending of a Russian noun deserves close scrutiny—declension also being dependent upon gender.

There are certain endings for male beings which have corresponding endings for their females just as in English we have baron, baron-ESS, patron, patron-ESS.

Thus in Russian:

MALE ENDING	CORRESPONDING FEMALE ENDING
—ИК }	—ИЦА
—ЕЦ }	
—ТЕЛЬ }	—ТЕЛЬНИЦА
Я }	—ИНЯ
—А }	—ЫНЯ
—Ь }	—ЬЯ
	—ИХА
Various	НА, preceded by another letter or syllable.

So:

Плмяннннн	nephew	Плмяннница	niece
Прийтель	male friend	Прийтельница	female friend

Гость male guest Гостья female guest
And so forth. These endings are useful, as they provide the key to hundreds of words.

DECLENSIONS OF NOUNS.

The beginner should take this subject gently. Let him read the immediately following pages through a few times in order to grasp the general principles of the Russian Declensions and, for the moment, concentrate upon the TABLE on page 2505. He should, however, return later and memorize the "Models" given below.

It is convenient to classify Russian nouns into those of masculine, feminine and neuter gender and into "Hard" and "Soft" (see page 2501) in accordance with the ending of the Nominative case.

A "Hard" noun is one which ends in a consonant (with "ъ" in the old spelling), or a "hard" vowel (see page 2501); a "soft" noun is one which ends in one of the "soft" vowels or the soft sign (ь). This distinction should be kept clearly in mind, as it is of great importance: the "soft" declensions will be found to follow the same general rules and inflexions as the hard excepting that their vowels remain soft throughout. Hence, the beginner is advised to concentrate his attention upon the 'hard' models first.

§ 1. MODELS FOR MASCULINE NOUNS

	Nom	Gen.	Dat.	Acc	Inst	Loc.
Hard endings Singular:	-(ъ)			like Nom. or Gen	-ом	-о
Hard endings Plural:		им		like Nom. or Gen.		
Thus:	Singular English Equivalent					
Nominative	Пароход			a, or, the steamer.		
Genitive	Пароход-а			of the steamer.		
Dative	Пароход-у			to the steamer.		
Accusative	Пароход			steamer (recipient of action). ¹		
Instrumental	Пароход-ом			by (means of) the steamer.		
Locative	О пароход-е			about the steamer (always with a preposition)		
	Plural					
Nominative	Пароход-ы			the steamers		
Genitive	Пароход-ов			of the steamers		
Dative	Пароход-ам			to the steamers.		
Accusative	Пароход-ы			steamers (object).		
Instrumental	Пароход-ами			by the steamers		
Locative	О пароход-ах			about the steamers.		

Now consider the 'soft' endings of masculine nouns and compare them with the 'hard' already given:

	Nom.	Gen.	Dat.	Acc	Inst	Loc
Singular: -ь (-я)	-я		-ю	-ь (я), я	-ем (ям)	-е
Plural: -и	-ов (-ов)	-им	-и (-ов -ей)	-им	-ях	

¹ In animates it is like the Genitive.

	Singular	
Nominative	Случа-я	the occasion, opportunity.
Genitive	Случа-я	
Dative	Случа-ю	
Accusative	Случа-я	(In animate beings is like the Genitive.)
Instrumental	Случа-ем	
Locative	О случа-е	
	Plural	
Nominative	Случа-и	occasions, opportunities.
Genitive	Случа-ев	
Dative	Случа-ям	
Accusative	Случа-и	(In animates like the Gen.).
Instrumental	Случа-ями	
Locative	О случа-ях	

There is a difference in pronunciation between **ая** (in singular) and **-ам** (plural)—**ая** being a diphthong and the **ae** said quickly (as in Kaiser), while in the plural form the **ah** and **ee** sounds are distinct the **ee** coming out more clearly.

An important group of masculine nouns end in the hissing consonants **ж, ч, ш, щ** and they have their nominative plural in **-и** instead of **-ы** and genitive plural in **-ей** instead of **-ов**.

Furthermore, if the accent is not on the last syllable in the nominative singular they take an **-е** instead of **-о** in the instrumental singular.

Singular: Товарищ, -а, -у, -а, -ем, -е. comrade
Plural: Товарищи, -ей, -ам, -ей, -ам, -ах.

§ 2. MODELS FOR FEMINE NOUNS.

	Nom.	Gen.	Dat.	Acc	Inst.	Loc.
Hard endings Singular:						
Hard endings Plural:	-ы	(ъ)	-ам	-ы(ъ) ¹	-ами	-ах
Thus:	Singular					
Nominative	Комнат-а			a room.		
Genitive	Комнат-ы			of a room, &c.		
Dative	Комнат-е					
Accusative	Комнат-у					
Instrumental	Комнат-ою					
Locative	О комнат-е					

And in the plural: Комнаты, комнат, комнатам, -ы, -ами, -ах (See footnote page 2505).

Similarly the 'soft' feminine nouns:—

	Nom	Gen	Dat	Acc	Inst	Loc
Soft endings Singular:	-я	-и	-е	-ю	-ею (ёю)	-е
Soft endings Plural:	-и	-ь	-им	-и(ь) ¹	-ями	-ях

Thus:

Неделя (week), Недели, -е, -ю, -ею, -е.

Plural. Недели, etc

Feminine nouns ending in **-ия** or **-ья** are similarly

declined, but take **-и** in the Dative and Locative, **-ей** in the Instrumental singular and **-а** in the Genitive plural

¹ **-ь, -ы**, for animates (*When **а**, is preceded by **г, ж, х** guttural, or hissing **ж, ч, ш**, then **ы** in genitive sing and nom and acc. pl change to **-и** In hissing consonants **ю** of Inst becomes **-ю** or **ей**)

Singular

Nominative **Партия** the party

Dative **Партии**

Instrumental **Партией**

Locative **О партии**

Plural

Genitive **Партий**

-ы are declined as follows

Части, а части.

Singular **Часть, Части, Части, Часть, Частью, О части.**

Plural **Части, Части, Части, Части, Части, О частях.**

The two very common soft feminine nouns for

mother and daughter (**мать, дочь**) are declined

Singular **Мать, Матери, Матери, Мать, Матерью, О матери.**

Plural: **Матери, -ей, -ям, -ей, -ями, ях.**

Дочь, Дочери, etc.

§3 MODELS FOR NEUTER NOUNS

Nom Gen Dat Acc Inst Loc.

Hard endings)

Singular

Hard endings)

Plural

Thus

Общество (society, association) **а, -у, -о, -ом, -е.**

Plural: **Общества, Обществ, -ам, -а, -ами, -ях.**

Nom Gen Dat Acc Inst Loc

Soft endings)

Singular

Plural

¹ **-о** preceded by guttural or hissing sound then Nom and

Acc Pl is **и** instead of **-а**

² After hissing sounds **я** and **ю** become **а** and **у**

Soft endings)

Plural:

Thus:

Поле (field) **-я, -ю, -е, -ем, о**

Plural **Поля, -ей, -ям, -я, -ями, -ях.**

When **-ь** comes before the soft **-е** of a nominative

neuter, then declension is as follows:

Singular **Воскресенье (Sunday) -ья, -ью, -ье, -ьям, -е.**

Plural **Воскресенья, -ий, -ьям, -ья, -ьями, -ьях.**

Having read these 'Models' over a few times until

the general principles are appreciated, now study

carefully the Table on this page which gives a 'Birds-

eye' view of the declension of nouns. From this the

following general rules may be evolved:

GENITIVE and DATIVE SINGULAR of Masculines

and Neuters are the same.

DATIVE, INSTRUMENTAL AND LOCATIVE PLU-

RALS are the same for all nouns.

MASCULINE and NEUTER SINGULARS are almost

the same.

FEMININE and NEUTER PLURALS are almost the

same.

LOCATIVE SINGULAR always ends in **-е** excepting

in a few feminine nouns which take **-и**.

Note that most feminine nouns ending **-ия, -ца,**

-ша, -ца, and **-ья** preceded by another consonant

take **-ей** in the genitive plural instead of **(-ь)** and

THE MOST FREQUENTLY RECURRING NOUNS IN RUSSIAN ARE.

1. Those ending in consonant (hard) and with hard

ending, **-а** and **-о**

2. Those ending **-а** and **-я** (feminine).

3 Those ending **-е** (neuter, abstract nouns.)

and their declension is, on the whole, regular.

It has already been noted that

accentuation (or stress) is of vital

importance. In many nouns this

changes with inflexion, thus

Nominative **Ключ** a key

Genitive **Ключа**

(accent shifted to last syllable).

When the accent shifts from nom-

inative to genitive in this manner, it

remains so throughout the remainder

of its inflexions. Thus, **Ключи**—keys

(Nom. Pl) etc. There are no safe

rules to guide the learner in this

(grammarians have, in fact, evolved

a number, but there are hosts of

exceptions to them), so the best

course is to learn the genitive, and

to be doubly sure the plural of each

noun as it is met.

BIRD'S EYE VIEW OF THE DECLENSION OF NOUNS.

Case and Number	MASCULINE NOUNS			FEMININE NOUNS			NEUTER NOUNS	
	Hard	Soft (after consonant)	Soft (after vowel)	Hard	Soft -я	Soft -ь	Hard	Soft
Singular								
Nom.	(ь)	-ь	и	-а	я	-ь	-о	е, е
Gen.	-а	-я	-я	-ы	и	-и	-а	я
Dat.	-у	-ю	-ю	-е	-е	и	у	-ю
Acc.	(ь)	-ь	-я	у	-ю	ь	-о	-е, -е
Inst.	-ом	-ем	-ем	ой	ей	ью	-ом	-ем, -ем
Loc.	е	-е	-е	е	-е	-и	-е	е
Plural								
Nom.	-ы(и)	-и	-и	-ы(-и)	-и	-и	-а	-я
Gen.	-ов(ей)	-ей	-ев	(ь)	-ь	-ей	(-ь)	-ей
Dat.	-ам	-ям	-ям	-ам	-ям	-ям	-ам	-ям
Acc.	-ы(-и)	-и	-и	-ы(-и)	-и	-и	-а	-я
Inst.	-ов	-ей	-ев	(-ь)	-ь	-ей		
Loc.	-ами	-ями	-ями	ами	-ями	ями	ами	-ями
	-ях	-ях	-ях	-ях	ях	ях	-ях	-ях

Golden Rule

In memorising the nouns in the vocabulary in Lesson 8 always learn the genitive singular and the nominative plural in addition to the nominative singular.

By this means nearly all the irregularities of nouns may be absorbed without the necessity for learning a mass of rules and exceptions—which would tend to confusion and delays

Characteristic Masculine endings in the Nominative are Consonant (—ъ) and —а

Characteristic Feminine endings in the Nominative are: Consonant —а and —я.

Characteristic Neuter endings in the Nominative are: Consonant —а and —о.

SUMMARY RULE FOR DECLENSION:

If a noun has (in the Nominative Case) any of the above Nominative Endings, then its declension follows the inflexions in the Table, as shewn in the Model Declensions.

NOTES ON IRREGULARITIES (FOR REFERENCE).

Masculine Nouns. Besides the regular singular Genitive (—а, —я) there is a Gen. Sing. in *у, ю* which is employed in many frequently recurring expressions, especially with reference to a portion or a part of something:—

Стакан чаю—a glass of tea; Кусок сахара—a piece of sugar; Мёду—some honey; Сыру—some cheese; Табаку—some tobacco, etc.

There is also a Locative in *у* instead of the regular form *о*: В году—in the year; На мосту—on the bridge; На полу—on the floor; Во рту—in the mouth; В углу—in the corner; В саду—in the garden; etc. It is only used with *на*—on; and *о, во*—in.

Many masculines have their plural in *-а (-я)* instead of the regular *-ы (-и)*, the only distinction between Nom. Pl. and Gen. Sing. being the accentuation, which shifts to the plural *а* and remains through all plural inflexions:—

		Plural
Город	town, city	Города́, —ов, —ам, etc.
Дом	home, house	Дома́
Голос	voice	Голоса́
Учитель	teacher	Учителѝ
Остров	island	Острова́
Снег	snow	Снега́

Foreign nouns ending *-ор, -ер*, generally denoting a profession or calling, follow this usage and take “*а*” in the plural: Доктор—doctor, Доктора́; Директор, —а; Кучер—cab driver (from German Kutscher), Кучера́, etc.

Certain masculines ending in hard (—ъ) or *ь* have Nom. plural in *-ья* and G. Pl. in *-ев*: Стул—chair,

Стулья́, Стульев; Лист—leaf, Листья́, Листьев.

NOTE. the common words. Сын—son, Pl. Сыновья́, G. Pl. Сыновей; Друг—friend, Pl. Други́я, G. Други́й; Муж, —husband, Pl. Мужья́, G. Мужей.

The ending *-анин*, indicating ‘an inhabitant of,’ omits *-ни* in the plural and takes *а* in the nominative: Англичанин—an inhabitant of Англия (England), i.e., Englishman; Англичане—Englishmen, etc.

The ending *-енок* signifying small animate beings is lost in the plural and replaced by *ята*: Ребёнок—little child, Pl. Ребѝта. Теля́нок—calf, Pl. Теля́та.

Two Plurals, each with different meaning: Лист—leaf; Листы́—leaves of paper; Листья́—leaves of a tree; Хлеб—bread and also grain (wheat, corn); Хлебы́—loaves of bread, Хлеба́—grains (of cereals); Цвет—colour and flower; Цветы́—flowers, Цвета́—colours.

NOTE Господи́н—Master, boss, Sir. Plural—Господа́, G. Pl. Господѝ.

Feminine Nouns. Feminines in *-ья* lose *-ь* in the Genitive Plural, and this is formed in *-ей*:

Семья́—family. Семѝя́—(G. Pl.)

Статья́—article. Статѝя́—(G. Pl.)

Neuter Nouns. Certain Neuters ending *-о* take *-ья* in the N. Pl. and *-ев* in G. Pl.

Поре́—pen N. Pl: Поре́я G. Pl: Поре́ев

Дерево́—tree N. Pl: Дере́вья G. Pl: Дере́вьев

Similarly certain Neuters in *-ю* form the plural nominative in *-ья*, G. Pl. *-ев*: Платьѝ, garment, clothing —Платьѝ, G. Pl: *ьев*.

NOTE. Око́—eye and Ухо́—ear:—Plurals—Очи́, Уши́.

Ябло́о—apple Pl: Ябло́ки G: Ябло́к

Обла́ко—cloud Pl: Обла́ки G: Обла́ков

Небо́—sky Pl: Небеса́ G: Небес

Дитѝ—child Gen. Sing. Дитѝи Pl: Дѝти

Чудо́—wonder, miracle Pl: Чудеса́.

Miscellaneous Irregularities: The word Человек—man uses the word Люди́—(people) for the plural (N. Люди́, —ѝя, —ям, —ѝа, —ья́, —я́х.) Another word—Муж has Мужѝ for men, but Мужья́ for husbands.

The letters *-е* and *-о* behave in a disconcerting manner, sometimes being inserted, sometimes being dropped for the sake of euphony. Thus Оте́ц—father, Отца́ (Gen.), Оте́ц (Dat.), Plural. Отцы́. День—day, Дни́, Дню́, Дни. This applies to all genders. Земля́—land, Gen. Pl: Земель (Fem.). Сердце́—heart. Gen. Pl: Сердец (neuter). This ‘fleeing’ irregularity is best learnt by observation, and committed to memory.

(A) The student is advised, on a first perusal of this Course, to memorize only pages 2502-05 and the table on page 2505 of the declension of nouns.

(B) The aim is to master general principles and essentials first.

(C) The nominative and genitive singular and the nominative plural are the essential parts of the Russian noun.

LESSON 3

Adjectives, Numbers and Pronouns

An adjective is a word used to describe the quality of a noun.

In Russian as in English an adjective may precede the noun, as when we say 'The new house.' Or it may follow it, as when we say 'The house is new.' In Russian when the adjective precedes the noun (as in 'The new house') and qualifies it as its 'attribute' it has a *long form*. If it follows (as in 'The house is new') and is a part of a 'predicate' with a verb expressed or omitted it has a *short form*.

The English adjective is invariable, but the Russian adjective is declined, and has the same six cases as the noun. Furthermore, it agrees in gender, number and in case with the noun which it qualifies.

Thus the Russian word for 'new' is *нов* and for 'house' is *дом*. A new house is—*новый дом*. 'The house is new' is—*дом нов*.¹

Adjectives have a hard and a soft declension, in accordance with whether they end in 'hard' or 'soft' vowels.²

Long Declension 'hard' НОВЫ—Я new

Singular.

	Masc.	Fem.	Neut.
Nom.	НОВЫЙ	НОВАЯ	НОВОЕ
Gen.	НОВОГО	НОВОЙ	НОВОГО
Dat.	НОВОМУ	НОВОЙ	НОВОМУ
Acc.	НОВЫЙ or -ого	НОВУЮ	НОВОЕ
Inst.	НОВЫМ	НОВОЮ	НОВЫМ
Prep.	О НОВОМ	НОВОЙ	НОВОМ

Plural

All three genders.

	Nom.	Gen.	Dat.	Acc.	Inst.	Prep.
	НОВЫЕ	НОВЫХ	НОВЫМ	НОВЫЕ or -ых*	НОВЫМИ	О НОВЫХ

Note that the plural is the same for all three genders.

All 'hard' declensions of adjectives follow the model of *НОВЫЙ*.

¹ In Russian the word 'is' is omitted—in fact, the present tense of the verb 'to be' is almost obsolete. See page 2516.

² Refer back to page 2501. 'Remarks on the pronunciation of vowels' and also to the table of Declension of Nouns on page 2505. It will be found later that the adjective endings are very similar to those of pronouns on page 2511.

Long Declension 'soft.'

The 'soft' declension of adjectives is exactly similar to the 'hard' except that a soft vowel replaces the hard in the endings. Example *СИННИ*, blue

Singular

	Masc.	Fem.	Neut.
N.	СИННИЙ	-яя	-ее
G.	-его	-ей	-его
D.	-ему	-ей	-ему
A.	-ий or -его	-юю	-ее
I.	-им	-ей (ю)	-им
P.	-им	-ей	-им

Plural.

All three genders

	N.
N.	СИННИЕ
G.	СИННИХ
D.	СИННИМ
A.	СИННИЕ (or синних)
I.	СИННИМ
P.	СИННИХ

NOTE. All masculine adjectives nominative long form end in -ий, -ий or -ей.

Feminines end in -ая or -яя

Neuters -ее or -ео

When an adjective follows the noun, as in the example 'The house is new' as already stated, the shortened form is used. This short form is found by dropping the long endings: -ий, -ий or -ей in the masculine, the last я in the feminine and the last е in the neuter, and adding ь to the root in soft masculine.

Thus: 'Hard' long form *новый*, -ая, -ее becomes *нов*, *нова*, *ново*.

'Soft' long form *синний*, -яя, -ее becomes *синь*, *синя*, *сине*.

Where the root of an adjective ends in a consonant preceded by another consonant or ь or я the short masculine form is formed by adding е (or о before л, ж, н), when euphony demands it, between the two consonants in the first case and by ь and я being changed into е in two other cases:

Thus:	короткий (short)	коротко
	огромный (huge)	огромно
	светлый (bright, clear)	светло
	больной (ill)	болно
	буйный (violent)	буйно

* The Accusative of the Masculine Singular, and of all three Genders in the plural, is the same as the Nominative with inanimate things and the Genitive with animate things. In adjectives as in nouns -ы after hissing or guttural is replaced by -и

but note **чистый** (clean) — **чист**, which sounds well without **е**.

Apart from these changes, the short form is invariable throughout all cases.

The plural of the short form is—**ы** (hard) or **и** (soft) for all three genders

TABLE OF DECLENSION OF ADJECTIVES

LONG FORM SINGULAR						
Cases	Masc		Fem.		Neut	
	Hard	Soft	Hard	Soft	Hard	Soft
N.	ый (ой)	ий	ая	яя	ое	ее
G.	ого	его	ой	ей	ого	его
D.	ому	ому	ой	ей	ому	ому
A.	Like the Nom or G		ую	ую	ое	ее
I.	ым	им	ою (ой)	ою (ей)	ым	им
P.	ом	им	ой	ей	ом	им

PLURAL

ALL THREE GENDERS		
Cases	hard	soft
N.	ые	ие
G.	ых	их
D.	ым	им
A.	Like the Nominative or Genitive	
I.	ыми	ими
P.	ых	их

SHORT FORM

SINGULAR					
Masc		Fem.		Neutr.	
Hard	Soft	Hard	Soft	Hard	Soft
—	ь	а	я	о	е

PLURAL

ALL THREE GENDERS	
Hard	Soft
ы	и

RULE. ALL ADJECTIVES ARE DECLINED IN ACCORDANCE WITH THIS TABLE

COMPARISON OF ADJECTIVES.

The Comparative of the long (or attributive) forms of adjectives is formed by putting the word **Более** (more) before the positive, thus **Умный**—clever, intelligent

Более умный—more clever, more intelligent

Thus the Russian word **Более** placed before an adjective corresponds to the common English ending **-er** for the comparative, as for example, in stronger, taller bigger smaller, etc.

There are two Russian words for **THAN**—**ЧЕМ** and **НЕЖЕЛИ**. Used with **Более** and an attributive (long) adjective in the nominative to follow, they express more. . . . than, **-er**. . . . than

Более умный человек чем Иван, more clever man than Ivan (John).

Более сильный животное нежели лев, a stronger animal than the lion.

LESS is expressed in Russian by **МЕНЕЕ**. Thus, **Менее высокий**—less high, tall. **Менее умная**—less clever (feminine) **Менее глубокая**—less deep (neuter).

In the case of the short (or predicative) form of adjective, the comparative is formed by changing the ending **ый, ий, or ёй** into **ее or ей** (for all three genders).

The word thus formed is never declined.

Сильный — strong

Сильнее, —ей — stronger

Than—**Чем**, **Нежели**, following a short form of adjective can be omitted while the noun or pronoun after the 'than' is then put in the Genitive:

Кошка хитрее собаки (gen.),—The cat (is) craftier (than) the dog. Or, **Кошка хитрее чем собака** (nom.).

Either form is correct.

EQUALITY is expressed by—**ТАК ЖЕ** (as) . . . **КАК** (as).

Он так же умён как она,—He is as clever as she

IRREGULAR COMPARATIVE FORMS.

The following is a list of frequently recurring adjectives of which the comparative is irregular.

Positive

Comparative

Predicative Attributive

Бли́зкий	Бли́же	near -er
Богáтый	Богáче	rich -er
Большóй	Большé	big -er
Высо́кий	Выше	Вы́сший
Глад́кий	Глад́же	smooth -er
Гро́мкий	Гро́мче	loud -er
Дале́кий	Дальше	distant, more distant
Дешё́вый	Дешё́вле	cheap -er
Доро́гой	Доро́же	dear -er, expensive, more-
Корот́кий	Корот́че	short -er [-ier]
Лёгкий	Лёгче	light -er, easy
Малень́кий	Меньше	Мень́ший
Молодо́й	Моло́же	young -er
Низ́кий	Низ́же	low -er, vile -er
Плохо́й	Хуже	Худ́ший
Просто́й	Прощé	simple -r
Ред́кий	Ре́же	scarce -r
Стáрый	Стáрше	old -er
Твёрдо́й	Твёр́же	hard -er

Тѣхнй	Тѣше		gentle -r	11 одиннадцать	одиннадцатый, я, ов—11th
Тѣлстѣй	Тѣлще		stout, thick -er	12 двенадцать	двенадцатый, я, ов—12th
Тѣннй	Тѣньше		thin -er	13 тринадцать	тринадцатый, я, ов—13th
Хорѣшнй	Лѣчше	Лѣчшнй	good, better	14 четырнадцать	четырнадцатый, я, ов—14th
Худѣй*	Хуже	Худшнй	bad, worse	15 пятнадцать	пятнадцатый, я, ов—15th
Чѣстѣй	Чѣще		frequent	16 шестнадцать	шестнадцатый, я, ов—16th
Чѣстѣй	Чѣще		pure, chaste	17 семнадцать	семнадцатый, я, ов—17th
Ширѣннй	Шѣре		wide	18 восемнадцать	восемнадцатый, я, ов—18th

The SUPERLATIVE in Russian is formed in three ways :—

- (1) By adding the word *Всех*, meaning 'of all' to the comparative of a short form when this is used.
- (2) By putting *Самый*, -ая, -ое, literally meaning 'the same,' but here meaning 'the most, utmost,' before the long form of an adjective when it is used.
- (3) By adding -ѣйшй, -ѣйша, -ѣйшее to the root of the adjective

Thus:

- (1) Этот дом лучше всех—This house (is) the best of all.
Та улица длиннее всех—That street (is) the longest of all.
- (2) Самое сильное государство—The strongest state.
- (3) Богатѣйшй человек в мире—The richest man in the world

IRREGULAR SUPERLATIVES.

Positive	Comparative	Superlative	
Близкий	Ближе	Ближайшй	near
Велѣкнй	Больше	Велѣчайшй	great
Старый	Старше	Старѣйшй	old
Тѣхнй	Тѣше	Тѣшѣйшй	slow, gentle
Ширѣннй	Шѣре	Ширѣчайшй	wide

NOTE. All the irregular comparatives and superlatives must be known, as they are of frequent recurrence.

* Also means 'thin' of animate things, in which case the comparative is худѣе.

NUMBERS

CARDINALS

1 один, одна, одно	первыи, первая, первое—first
2 два, две (ф.)	второй, я, ов—second
3 три	третий, я, ов—third
4 четыре	четвертый, я, ов—fourth
5 пять	пятый, я, ов—fifth
6 шесть	шестой, я, ов—sixth
7 семь	седьмой, я, ов—seventh
8 восемь	восьмой, я, ов—eighth
9 девять	девятый, я, ов—ninth
10 десять	десятый, я, ов—tenth

ORDINALS

11 одиннадцать	одиннадцатый, я, ов—11th
12 двенадцать	двенадцатый, я, ов—12th
13 тринадцать	тринадцатый, я, ов—13th
14 четырнадцать	четырнадцатый, я, ов—14th
15 пятнадцать	пятнадцатый, я, ов—15th
16 шестнадцать	шестнадцатый, я, ов—16th
17 семнадцать	семнадцатый, я, ов—17th
18 восемнадцать	восемнадцатый, я, ов—18th
19 девятнадцать	девятнадцатый, я, ов—19th
20 двадцать	двадцатый, я, ов—20th
21 двадцать один	двадцать первый, я, ов—21st
22 двадцать два	двадцать второй, я, ов—22nd
30 тридцать	тридцатый, я, ов—30th
40 сорок	сороковой, я, ов—40th
50 пятьдесят	пятидесятый, я, ов—50th
60 шестьдесят	шестидесятый, я, ов—60th
70 семьдесят	семидесятый, я, ов—70th
80 восемьдесят	восемидесятый, я, ов—80th
90 девяносто	девяностый, я, ов—90th
100 сто	сотый, я, ов—hundredth
200 двести	двухсотый, я, ов—200th
300 триста	трехсотый, я, ов—300th
400 четыреста	четырехсотый, я, ов—400th
500 пятьсот	пятисотый, я, ов—500th
600 шестьсот	шестисотый, я, ов—600th
700 семьсот	семисотый, я, ов—700th
800 восемьсот	восемисотый, я, ов—800th
900 девятьсот	девятисотый, я, ов—900th
1000 тысяча	тысячный, я, ов—

2000 две тысячи	двухтысячный, я, ов—two thousandth
10,000 десять тысяч	десяти тысячный, я, ов—ten thousandth
4,000,000 миллион	миллионный, я, ов—millionth
1,000,000,000,000 биллион	биллионный, я, ов—billionth

To the ordinals belong also the following numbers which are declined as adjectives:

другой -я, -о—the other; последний -я, -о—the last; единственный—alone; двойной—twofold; двойной—double.

DECLENSION OF NUMBERS.

Cardinal numbers ending in 'ь' as пять, десять, etc., are declined like feminine nouns in 'ь': пять, пятѣ, пятѣи, пять, пятью, (о) пятѣ.

Сорок, сто, тысяча, миллион—are declined like nouns of corresponding terminations, e.g. тысяча, и, о, у, ю, (о) тысячѣ, тысячѣи, тысячѣ, etc., but сорок и сто are now used only in singular nom., and accus., сорок, сто, and

In gen., *сорок*, etc., while in plural *сорок* is hardly used at all except in gen., *сороков* in a popular expression *сорок сороков* (40 × 40) when referring to the number of churches in Moscow, and *сто* is used in gen. plural —от, dat. —стам, inst. —стами, and prep. —(о) стах.

Один, два, три, четыре, оба (both) have a special declension.

Singular			Plural
Masc.	Fem.	Neut.	
N. один	одна	одно	одни
G. одного	одной	одного	одних
D. одному	одной	одному	одним
A. Like N. or G.	одну	одно	Like N. or G.
I. одним	одной	одним	одними
P. (об) одним	одной	одним	одних

Plural

Masc. & Neut.		Fem. for the three Genders.		Masc. & Neut.	
N. два	два	три	четыре	оба	оба
G. двух	трех	четырёх	обих	обих	обих
D. двум	трем	четырем	обим	обим	обим
A. Like Nom. or Gen.			Like Nom. or Gen.		
I. двумя	тремя	четырьмя	обими	обими	обими
P. (о) двух	трех	четырёх	(об) обих	обих	обих

REMARKS. The plural of *один, одни, одну*, has the meaning of "some;" *один* also means "alone."

In compound cardinal numbers each term is separately declined :

200. *двести, двухсот, двумстам, двести, двумя-стами, (о) двух-стах.*

21. *двадцать один* (masc.) *двадцати одного, двадцати одному, двадцать одного* (ог *один*), *двадцать одним, (о) двадцати одним.*

In compound ordinal numbers the last term only is ordinal and therefore is declined while all preceding terms are cardinal, like in English :

1859th—*тысяча восемьсот пятьдесят ДЕВЯТЫЙ, АЯ, ОЕ, etc.*

After *один* the noun stands in the nominative singular.

After the cardinal numbers—*два, три, четыре* and also *оба, обо* (both), when used in the nominative or accusative, the following noun, when standing by itself, is put in the genitive singular; the qualifying adjective, however, is put in the nominative (rarely in the genitive) plural. From *пять* (5) onwards, when the number is nominative or accusative, both noun and adjective are put in the genitive plural:

Четыре человека—four men.

Три красивые (nom.) (ог *красивых*) *женщины*—Three beautiful women.

Тридцать пять больших домов—35 big houses.

FRACTIONS.

Fractions are formed as in English : a cardinal is used for the numerator and an ordinal for the denominator, in gen. pl. from 2 onwards:

one fifth—*одна пятая*

three sevenths—*три седьмых*

Note the following special forms:

one half—*половина*

one third—*треть*

a quarter ($\frac{1}{4}$)—*четверть*

a hundred—*сто*

one and a half—*полтора*

a pair—*две, двойна, пара*

a dozen—*дюжина*

a set of three—*тройка*

a set of four—*четвёрка*

once—*одинжды*

twice—*дважды*

thrice—*трижды* or *три раза*

four times—*четыре раза*

hundred times—*сто раз*

firstly—*во-первых*

secondly—*во-вторых*

thirdly—*в-третьих*

In counting, *раз* is used for one; *раз, два, три* etc.

To indicate an approximate number, the numeral is placed after the noun.

About four years—*года четыре*

About 20 roubles—*рублей двадцать*

HOW TO EXPRESS TIME.

What time is it?—*какой час?*

One o'clock, час Two o'clock два часа. Five o'clock—*пять часов.* (час—an hour, часы a watch) Half-past ten—*половина одиннадцатого* (lit. half of the 11th hour) Twenty past one—*двадцать минут второго* (lit. 20 minutes of the 2nd hour). Quarter past six—*четверть седьмого* (lit. a quarter of the 7th hour). Quarter to nine без четверти девять (lit. nine without a quarter). Ten to two—*без десяти два* (lit. two without ten minutes). 'Hours' and 'minutes' are understood.

утро (morning) is used for from 6 a.m. to noon, approximately. полдень or день (afternoon) is used for from 12 noon to 6 p.m. (generally *день* means the day). вечер (evening) is used for from 6 p.m. to midnight. ночь (night) is used for from midnight to 6 a.m.

3 p.m.—*три часа дня* (or *по-полудни*). 5 a.m.—*пять часов ночи* (or *утра*).

HOW TO EXPRESS DATE.

On the 10th of October—*Десятого Октября.*

The first of June—*Первое Июня.*

1936—ты́сяча девя́тсот три́дцать шесто́й год.

NOTE that the date is in neuter, because the word *число* (number) is understood, and the English on the is expressed by the genitive case of the ordinal number. On the 25th of May—*два́дцать пя́того Ма́я*.

Letters are dated thus:

1st January, 1937—*1-го Я́нваря 1937 г.*

(pronounce: *пéрвого я́нваря ты́сяча девя́тсот три́дцать то́дья́ного го́да*).

HOW TO EXPRESS AGE.

Age is expressed either by the nominative of the person and the genitive of the number of years he is 13 years old—*он три́на́дцати лет* (lit he (is) of 13 years), or by the dative of the person and the nominative of the number She is 20 years old *Е́й два́дцать лет* (lit to her twenty years).

От *роду* (since birth) are either added or understood I am now 30 years old—*я́н теперь́ три́дцать лет от роду*

(lit. to me now thirty years from birth).

How old are you? *Ско́лько вам лет?* (lit. "how many summers to you?")

I am twenty one years old—*Мне два́дцать оди́н год.* (lit "to me 21 years")

He was 35 years old on the 10th July, 1887—*Е́му бы́ло три́дцать пять лет де́сятого ию́ля ты́сяча восе́мьсо́т во́семьдесят се́дью́го го́да.*

HOW TO EXPRESS PRICE.

How much does this, that cost?—*ско́лько э́то, то сто́ит?* 15 roubles—*Пятна́дцать ру́бля́.*

Three roubles each—*По́ три ру́бля́.*

Four stamps at one kopek each—*Четы́ре ма́рки по оди́н ко́пейке.*

NOTE. Price is expressed by the Dative of the Number with the Preposition *по* (—at, at the rate), but the Numbers 2, 3, and 4 are put in the Accusative and take Genitive Singular of the Noun, as in the above examples

PRONOUNS

Russian pronouns are declined, and their usage on the whole is the same as in English The word *себя* (self) can be applied to any of the three persons *сам* is used before or after the word it qualifies я *сам*, сам я, I myself

The Table which follows may appear formidable, but all these words are of very frequent recurrence and must be mastered at this stage Learn each word and

its declension, writing out the English equivalent in accordance with the explanation of the cases given on page 2502 and 2503.

The initial *и* in *их*, *им*, *ими* is pronounced yee—.

NOTE *твой*, thine, and *свой*, his, are to be declined like *мой* *ваш*, yours, is declined like *наш*. *Его́* (pr yeh'vo') his, its, *Её́*, hers, and *—их*, theirs, are invariable throughout.

TABLE OF PRONOUNS

	1	2	3	4	5	6	7	8
	I	THOU	HE (IT)	—SELF	MY MINE	OUR—S	THAT	THIS

MASCULINE AND NEUTER FORMS

Nom.	Я	ТЫ	ОН (m) ОНО́ (n)	—	МОЙ (m.) МОЁ (n.)	НАШ (m) НАШЕ (n)	ТОТ (m) ТО (n.)	ЭТО́Т (m.) ЭТО́ (n.)
Gen.	МЕНЯ́	ТЕБЯ́	ЕГО́	СЕБЯ́	МОЕГО́	НАШЕГО	ТОГО́	ЭТО́ГО
Dat.	МНЕ	ТЕБЕ́	ЕМУ́	СЕБЕ́	МОЕМУ́	НАШЕМУ	ТОМУ́	ЭТО́МУ
Acc.	МЕНЯ́	ТЕБЯ́	ЕГО́	СЕБЯ́	(МОЙ (m) (МОЕГО́)*	(НАШ (m.) (НАШЕГО)	(ТОТ (m.) (ТОГО́)	(ЭТО́Т (m.) (ЭТО́ГО)
Ins.	МНОЙ (Ю)	ТОБО́Й (Ю)	ИМ	СОБО́Й (Ю)	МОИМ	НАШИМ	ТЕМ	ЭТИМ
Prep.	МНЕ	ТЕБЕ́	Е́МУ	СЕБЕ́	МОЁМ	НАШЕМ	ТОМ	ЭТО́М

* The form of Masculine Accusative in brackets is used in reference to animate beings

FEMININE FORMS

Nom.	SAME AS MASCULINE	ОНА́ (she)	AS ABOVE	МОЯ́	НАША	ТА	ЭТА
Gen.		Е́Е		МОЕЯ́	НАШЕЯ́	ТОЯ́	ЭТОЯ́
Dat.		Е́Й		МОЕЯ́	НАШЕЯ́	ТОЯ́	ЭТОЯ́
Acc.		Е́Е		МОЮ́	НАШУ́	ТУ́	ЭТУ́
Ins.		Е́Я (Ю)		МОЕЯ́ (Ю)	НАШЕЯ́ (Ю)	ТОЯ́ (Ю)	ЭТОЯ́ (Ю)
Prep.		НЕ́Й		МОЕЯ́	НАШЕЯ́	ТОЯ́	ЭТОЯ́

TABLE OF PRONOUNS (continued)¹

PLURAL—ALL GENDERS

	1	2	3	4	5	6	7	8
Nom.	МЫ	ВЫ	ОНИ (m.) ОНИ (f.)		МОИ	НАШИ	ТЕ	ЭТИ
Gen.	НАС	ВАС	ИХ	AS ABOVE	МОИХ	НАШИХ	ТЕХ	ЭТИХ
Dat.	НАМ	ВАМ	ИМ		МОИМ	НАШИМ	ТЕМ	ЭТИМ
Acc.	НАС	ВАС	ИХ		МОИ	НАШИ	ТЕ	ЭТИ
Ins.	НАМИ	ВАМИ	ИМИ		(МОИХ)*	(НАШИХ)	(ТЕХ)	(ЭТИХ)
Prep.	НАС	ВАС	НИХ		МОИМИ	НАШИМИ	ТЕМИ	ЭТИМИ

10 OF WHAT SORT IS? 11 WHICH? 12 WHOSE? 13 WHO? 14 WHAT? 15 ALL SELF

MASCULINE AND NEUTER FORMS

Nom.	КАКОЙ (m.) КАКОЕ (n.)	КОТОРЫЙ (m.) КОТОРОЕ (n.)	ЧЕЙ (m.) ЧЬЕ (n.)	КТО	ЧТО	ВСЕ (m.) ВСЕ (n.)	САМ (m.) САМО (n.)
Gen.	КАКОГО	КОТОРОГО	ЧЬЕГО	КОГО	ЧЕГО	ВСЕГО	САМОГО
Dat.	КАКОМУ	КОТОРОМУ	ЧЬЕМУ	КОМУ	ЧЕМУ	ВСЕМУ	САМОМУ
Acc.	{ КАКОЙ (m.) (КАКОГО)* }	{ КОТОРЫЙ (m.) (КОТОРОГО) }	{ ЧЕЙ (m.) (ЧЬЕГО) }	КОГО	ЧТО	{ ВСЕ (m.) (ВСЕГО)* }	{ САМ (m.) (САМОГО)* }
Ins.	КАКИМ	КОТОРЫМ	ЧЬИМ	КЕМ	ЧЕМ	ВСЕМ	САМИМ
Prep.	КАКОМ	КОТОРОМ	ЧЬЕМ	КОМ	ЧЕМ	ВСЕМ	САМОМ

FEMININE FORMS

Nom.	КАКАЯ	КОТОРАЯ	ЧЬЯ			ВСЯ	САМА
Gen.	КАКОЙ	КОТОРОЙ	ЧЬЕЙ	AS ABOVE	ABOVE	ВСЕЙ	САМОЙ
Dat.	КАКОЙ	КОТОРОЙ	ЧЬЕЙ			ВСЕЙ	САМОЙ
Acc.	КАКОЮ	КОТОРУЮ	ЧЬЮ			ВСЮ	САМОЕ
Ins.	КАКОЮ (Ю)	КОТОРОЙ (Ю)	ЧЬЕЙ (Ю)			ВСЕЙ (Ю)	САМОЙ (Ю)
Prep.	КАКОЙ	КОТОРОЙ	ЧЬЕЙ			ВСЕЙ	САМОЙ

PLURAL—ALL GENDERS

Nom.	КАКИЕ	КОТОРЫЕ	ЧЬИ			ВСЕ	САМИ
Gen.	КАКИХ	КОТОРЫХ	ЧЬИХ	AS ABOVE	AS ABOVE	ВСЕХ	САМИХ
Dat.	КАКИМ	КОТОРЫМ	ЧЬИМ			ВСЕМ	САМИМ
Acc.	КАКИЕ	КОТОРЫЕ	ЧЬИ			ВСЕ	САМИХ
* (КАКИХ)	(КОТОРЫХ)	(ЧЬИХ)				(ВСЕХ)	
Ins.	КАКИМИ	КОТОРЫМИ	ЧЬИМИ			ВСЕМИ	САМИМИ
Prep.	КАКИХ	КОТОРЫХ	ЧЬИХ			ВСЕХ	САМИХ

¹ The form of Masculine Accusative in brackets is used in reference to animate beings.

LESSON 4

The Verbs

"A verb is a word used for saying something about of the language. To master all its complexities and some person or thing" For example: The man subtleties is for the foreigner a work of years. It is, drinks, the woman speaks, the child plays—drinks, however, a comfort to know that for practical purposes speaks, plays are verbs a limited knowledge is sufficient, and that, with a

The Russian verb is perhaps the most difficult part general knowledge of the structure, essential usages

and most frequently used verbs, almost every situation can be coped with. What is given here is an absolute minimum and must be known thoroughly.

PARTS OF THE VERB WHICH MUST BE KNOWN

(a) The *INFINITIVE*, i.e., "that part of the verb which names the action, without reference to any doer, and is therefore, not limited by person or by number." Thus *дѣлать*—to do, to make. *желать*—to wish.

(b) The *PRESENT TENSE*, which represents the English forms I do, I wish; you do, you wish, etc. *я дѣлаю, я желаю; ты дѣлаешь, ты желаешь. . . .*

(c) The *PAST TENSE* corresponding to the English I did, I wished, etc. *я дѣлал, я желал. . . .*

(d) The *FUTURE TENSE* corresponding to the English I shall do, I shall wish, etc. *я буду дѣлать, желать. . . .*

(e) The *IMPERATIVE* corresponding to the English command. Do—this or that! Speak! etc. *дѣлай, желай.*

Most Russian verbs have two 'aspects' indicating either an *incompleted* or *continuous action* without regard to its beginning or end, as, for example, when we make the general statements 'I read books,' 'I receive letters,' 'I teach English' This is called the *IMPERFECT ASPECT*. The other is the *PERFECT ASPECT* and it indicates that the action has been or will be *entirely completed* or has taken place only once, as, for example, when we say, 'I have read a book,' or 'I will read a book.'

Most of the essential Russian verbs are *IMPERFECTIVE*.

Imperfective verbs have a Present, Past and Future (Perfective Verbs have only a Past and a Future).

All forms of a Russian Verb are derived from the Infinitive, for which the endings are *ть, чь, ти, or -чи*, thus:

писать, to write
мочь, to be able
идти, to go

The Present Tense has two main classes of endings for the different persons and numbers, thus:—

1st Conjugation		2nd Conjugation	
I	Я -у (or ю)	-ю (or у after hissing consonants ж, ч, ш, щ)	
Thou	Ты -ешь	-ишь	
He, she, it	Он, она, оно -ет	-ит	
We	Мы -ем	-им	
You	Вы -ете	-ите	
They	Они -ут (or -ют)	-ят (or -ат)	

For example:

1st Conjugation		2nd Conjugation	
(carry)	(read)	(speak)	(shout)
Я нес-у	чита-ю	говор-ю	крич-у
Ты нес-ешь	чита-ешь	говор-ишь	крич-ишь
Он, она, оно нес-ет	чита-ет	говор-ит	крич-ит
Мы нес-ем	чита-ем	говор-им	крич-им
Вы нес-ете	чита-ете	говор-ите	крич-ите
Они нес-ут	чита-ют	говор-ят	крич-ат

The *Past Tense* is formed by cutting off the Infinitive ending and substituting

-л masculine }
-ла feminine } for all persons in the singular
-ло neuter }

ли for all genders and persons in the plural

сг
писа-ть (to write) люб-ть (to love)
писа-л, ла, ло } (wrote) люб-л, ла, ло } (loved)
писа-ли } люб-ли }

The *Future Tense* is formed by using the future tense of the auxiliary verb *быть*—(to be) together with the Infinitive imperfective of the given verb.

Thus: Я буду читать—I shall read

Я буду просить—I shall ask.

The *Imperative* is formed by changing the ending of the second person present tense into *и* (in singular) and *ите* (in plural) (or -а and -айте after a vowel)

So Дѣлать to do Люб-ть to love
Ты дѣлаешь thou doest Вы любите you love
Imperative Дѣлай (singular) } Do! Люб-и } love!
Дѣлайте (plural) } Люб-ите }

The third person of the imperative (let him, her, them do, etc.) is formed by using the word *пусть* or *пусть* (imperative of *пускать*—to let, or allow) followed by the third person present tense, if the verb is imperfective, or the future tense, if the verb is perfective

Пусть он дѣлает, Let him do (it), (imperfective)

Пусть они дѣлают, Let them do.

Срѣзать—to cut off (perfective)

Пусть (or пусть) он срѣжет, он срѣжет, let him, (them), cut off (in future).

The above are the essential parts of a Russian verb. But there are others, the most important of which are the *Participles*.

A Participle represents a combination of verb and adjective, as when we say "a closed door:" "closed" is a part of the verb 'to close' and is here used to qualify (or describe) door.

The Russian verb has two Participles, Present and Past, in both active and passive classes.

The Present active is formed by removing the *-т* of the third person plural present, and replacing it by: *-щий* (Masc.); *-щая* (Fem.); *-щее* (Neut.)

Example: *Делают*—They do
Pres. Part. *Делющий*—doing

The Past Participle (active) is formed by removing the *-т* of the Past Tense and replacing it by *-вший* (Masc.), *-вшая* (Fem.); *-вшее* (Neut.)

Example: *Говорил*—spoke
Past Part. *Говоривший*—having spoken.

The present participle passive (In imperfective verbs) is formed by adding to the first person plural of the present tense the adjectival endings *-ый, -ая, -ое, -ые*.

(When the participles, like adjectives, are used as predicates these endings are omitted)

Мы любим—we love

Любимый—loved, beloved

Мы желаем,—we wish *желаемый*,—being wished

The past participle passive (In perfective verbs) is formed by adding to the root of the infinitive (i.e. after removing *ть* etc.) in most cases such endings as *-тый, -ая, -ое, -ые, -ный, -ая, -ое, -ые, or -ный, etc.*

When used as a predicate the same rule as above applies.

Убить—to kill, *Убитый*—killed. He (is) killed—*Он убит*. (See page 2515, Formation of the Passive.)

THE PARTICIPLES ARE DECLINED AS ADJECTIVES (See pages 2507-8). Hence, from every verb, it is possible to make at least two Adjectives, or, with the passive class—three

CONJUGATION OF THE VERB.

As we have seen (page 2513) there are two conjugations of Russian verbs, in accordance with the endings of the Present Tense (or future in perfective verbs). The first has *ешь* in the second person singular, and *ят* or *ют* in the third person plural

To the first belong:—

(a) verbs of one syllable ending in *-ть* preceded by a vowel: *врать*—to tell lies, *бить*—to strike, etc.

(b) verbs ending *-чь, -ать, -сть, -ти*.

(c) verbs of more than one syllable ending in *-ать, -ять, -очь, -нуть, -врать*.

To the second belong:

(a) verbs of more than one syllable ending *-ить*.

(b) verbs of more than one syllable ending in *-ать* preceded by a hissing sound (*ж, ч, ш, щ*), they take *-у* instead of *-ю* in the first person singular present.

MODEL VERBS

1st Conjugation *Желать*—To Wish Present Tense

Я желаю	I wish
ты желаешь	thou wishest
он }	he wishes
она } желает	she wishes
оно }	it wishes
мы желаем	we wish
вы желаете	you wish
они желают	they wish

Past Tense

Я желал, ла, ло	I wished
ты желал, ла, ло	thou wishedst
он желал	he wished
она желала	she wished
оно желало	it wished
мы желали	we wished
вы желали	you wished
они желали	they wished

Future Tense

Я буду желать	I shall wish
ты будешь желать	thou wilt wish
он }	he will wish
она } будет желать	she will wish
оно }	it will wish
мы будем желать	we shall wish
вы будете желать	you will wish
они будут желать	they will wish

Imperative

2. Sing. *желай*—wish ! 2. Pl. *желайте*—wish !
3. Sing. пусть он, она, оно желает—let him, her, it wish
3. пусть они желают—let them wish.

Present Participle

желающий, ая, ое—he, she, it that wishes, wishing.

Past Participle

желавший, ая, ое—he, she, it that wished, having wished

2nd Conjugation

Infinitive *Говорить*—To Speak Present Tense

Я говорю	I speak
ты говоришь	thou speakest
он }	he speaks
она } говорит	she speaks
оно }	it speaks
мы говорим	we speak
вы говорите	you speak
они говорят	they speak

Past Tense

Я говорил, а, ло	I spoke
ты говорил, а, ло	thou spoked
он говорил	he spoke
она говорила	she spoke
оно говорило	it spoke
мы говорили	we spoke
вы говорили	you spoke
они говорили	they spoke

Future Tense

Я буду говорить	I shall speak
ты будешь говорить	thou wilt speak
он } будет говорить	he will speak
она } будет говорить	she will speak
оно } будет говорить	it will speak
мы будем говорить	we shall speak
вы будете говорить	you will speak
они будут говорить	they will speak

Imperative

2. Sing. говорй—speak ' 2. Pl. говорйте—speak '
 3. Sing. пусть он, она, оно говорит—let him, her, it speak
 3. Pl. пусть они говорят—let them speak

Present Participle

говорящий, ая, аю—he, she, it that speaks, speaking

Past Participle

говорявший, ая, аю—he, she, it that spoke, having spoken.

ALL RUSSIAN VERBS FOLLOW THESE MODELS IN ACCORDANCE WITH THE RULES GIVEN

The Perfective Aspect is in most cases formed from the Imperfective by the addition of a Prefix, such as *на-, про-, при-, на-, у-, etc*

Imperfective писать—to write; читать—to read

Perfective: написать—to write; прочитать—to read through

In some cases the imperfective is formed from perfective by adding a participle such as, *а* before the infinitive ending *ть* Thus

убить—to kill (instantaneously), perfective

убивать—to kill (on several occasions), imperfective.

As mentioned before (p. 2513) the perfective form has no present tense, and its future tense, instead of being composite, is simple in form and follows the lines of Present Tense in Imperfective form. Thus *убить*—to kill.

Future tense: Я убью, ты убьёшь, он убьёт, мы убьём, вы убьёте, они убьют.

NOTE that the verb *убить* belongs to the first conjugation, because it is formed from the imperfective verb *бить*—to strike, hit,—which belongs to that conjugation in accordance with the rules already given (page 2514).

FORMATION OF THE NEGATIVE.

To form the negative of the verb, put *не* immediately before it. Thus.

Я не люблю его	I do not like him.
Я не делаю	I am not doing.
Ты не придёшь	Thou wilt not come.
Он не сидит	He is not sitting.

FORMATION OF THE INTERROGATIVE.

To ask a question, put the verb first, then the word *ли* (if, whether) and then the pronoun.

Делаю—ли я?	Am I doing?
Хотите—ли вы?	Do you want?
Убегут—ли они?	Will they run away?

FORMATION OF THE PASSIVE

When a person or thing suffers an action from some other person or thing, the verb is said to be in the passive. Thus "the house is built by Jack"—"is built"—is passive of the verb to build

The Passive in Russian is formed by: (a) adding the verb "to be" (*быть*) to the passive participle (present in imperfective, past in perfective verbs), in instrumental case with the infinitive and in nominative case, with other forms of the verb

Забывать—to forget (imperfective).

Быть забываемым—to be forgotten

Он не забываем—He (is) not being forgotten

Забывать—to forget (perfective)

Быть забытым—to be forgotten

Я был забыт—I was forgotten

(b) by the use of the Reflexive Form (See below).

(c) by using the third Person Plural of the Present.

Говорят—(they) say, i.e., it is said

Его зовут—(they) call him, i.e., he is called

Здесь говорят по-русски—here (they) speak Russian—Russian is spoken here.

(b) and (c) are the commonest and easiest forms in everyday speech

REFLEXIVE CONJUGATION

A verb is reflexive (a) when its action is both performed and suffered by the subject ("I wash myself") and (b) when two pronouns instead of one are used in conjugation. In English there are few reflexive verbs, but there are many in Russian.

Examples

Родить	to bear a child.
Родиться	to be born.

—the ending *-ся* (contraction of *себя* self) making the verb reflexive (*-ся* after a vowel becomes *-сь*)

With these additions a reflexive verb is conjugated exactly as a simple verb.

IMPERFECTIVE FORM

Умываться—to wash oneself.

Present Tense

Singular

Я умываюсь	I wash myself
ты умываешься	thou wastest thyself
он, —á, —ó умывается	he, she, it washes himself, herself, itself

Plural

мы умываемся	we wash ourselves
вы умываетесь	you wash yourselves
они умываются	they wash themselves

Past Tense

Singular

Я умывался, лась	I washed myself
ты умывался, лась	thou washedst thyself
он умывался	he washed himself
она умывалась	she washed herself
оно умывалось	it washed itself

Plural

мы умывались	we washed ourselves
вы умывались	you washed yourselves
они умывались	they washed themselves

Future Tense

Singular

Я буду умываться	I shall wash myself
ты будешь умываться	thou wilt wash thyself.
он будет умываться	he will wash himself
она будет умываться	she will wash herself
оно будет умываться	it will wash itself

Plural

мы будем умываться	we shall wash ourselves
вы будете умываться	you will wash yourselves
они будут умываться	they will wash themselves

Imperative

Sing. умывайся	wash thy self
Plur. умывайтесь	wash yourself, —selves

PERFECTIVE FORM.

Умыться—to wash oneself

Present Tense

wanting

Past Tense

Singular

Я умылся, лась	I washed myself
ты умылся, лась	etc.
он умылся	
она умылась	
оно умылось	

Plural

мы умылись
вы умылись
они умылись

Future Tense

Singular

Я умоюсь	I shall wash myself
ты умоешься	etc.
он, —á, —ó, умоется	

Plural

мы умоемся
вы умоетесь
они умоются

Imperative

Sing. умойся

Plur. умойтесь

NOTE again that the bi-syllabic perfective verb *умыть* (ся) follows the conjugation of the mono-syllabic imperfective verb *мыть*—to wash, from which it is derived.

NOTE the formation: *мыть* (imperfective), *умыть* (perfective), *умывать* (imperfective), all three meaning to wash, with certain different shades (nuances).

AUXILIARY VERBS

The Russian verb "to have"—*иметь* is not used as an auxiliary, but is used in the ordinary sense "to possess," or "to be possessed of." Apart from its "to be possessed of" is rendered by the third person present tense singular of the verb "to be" (the only part of this tense now in common use) in conjunction with a pronoun or noun denoting the possessing subject.

Singular

I have	я имѣю	or у меня есть
thou hast	ты имѣешь	у тебя есть
he, she, it has	он, она, оно имѣет	or у него, у ней есть

Plural

we have	мы имѣем	у нас есть
you have	вы имѣете	у вас есть
they have	они имѣют	у них есть.

There are three auxiliary verbs in Russian,

Infinitives	быть	to be (perfective)
	быва́ть	to be usually, or continually (imperfective).
	ста́ть	to become, or begin

Present Tense

(imperfective)

(perfective)

Singular

есть (is, there is)	Я бываю	I am	Singular
		usually	wanting
	ты бываешь	etc.	
	он, —á, —ó, бывает		

Plural

мы бываем
вы бываёте
они бываю́т

Past Tense

Singular

Я был, á, о	I was	Я быва́л, а, о	—	Я ста́л, а, о
ты был, á, о	etc.	ты быва́л, а, о		ты ста́л
он был		он быва́л		он ста́л
она была́		она быва́ла		она ста́ла
оно было́		оно быва́ло		оно ста́ло

Plural		Plural		Plural	
мы были	мы бывали	мы были	мы бывали	мы стали	мы стали
вы были	вы бывали	вы были	вы бывали	вы стали	вы стали
они были	они бывали	они были	они бывали	они стали	они стали

Future Tense					
Singular		Compound forms		Singular	
Я буду	I shall or will be	ты будешь	etc.	стану	станешь
он, она, оно	будет	станет		станет	

Plural		Plural		Plural	
мы будем	Я буду	бывать, etc.	станем	станете	станут
вы будете					
они будут					

Imperative					
2nd pers		2nd pers		2nd pers	
Sing	Plur	Sing	Plur	Sing	Plur
будь	будьте	бывай	бывайте	стань	станьте
3rd pers		3rd pers.		3rd pers	
Sing	Plur	Sing	Plur	Sing	Plur
пусть	пусть	пусть	пусть	пусть	пусть
будут	будут	быва́ет	быва́ют	ста́нет	стану́т

let him be let them be

Present Participle			
Sing	сущий, щая, щее which is	бывающий, щая, щее	wanting
Plur	сущие (Future будущий щая щее)	бывающие	wanting

Past Participle			
Sing	бывший, шая, шее —which was	бывавший, шая, шее	ставший, шая, шее
Plur	бывшие	бывавшие	ставшие

Of the above verbs *быть* and its parts is the most important, as it is used to form compound tenses of other verbs.

In simple expressions the word "is" may be omitted altogether in Russian.

Я англичанин—I (am) an Englishman

Это моя жена—This (is) my wife

Что это?—What (is) this?

Кто это?—Who (is) this?

"Here is," "here are" are both expressed by the word *вот* (which corresponds to the French "Voici"):

Вот мой дом—Here (is) my house

"Is there?" "Are there?" may be expressed by *есть*

Есть у вас бумага?—Have you (is there by you) any paper?

NB *есть* is very commonly used in this sense in shops, restaurants, etc.

Есть у вас сегодня баранина?—Have you to-day any mutton?

As a result of the frequent omission of *есть* many single Russian words represent whole phrases in English

надо—it is necessary

можно—it is possible

холодно—it is cold

тепло—it is warm

будет!—that is enough!

бывать—"to be usually" "to frequent" is useful

Я бываю дома—I am usually (to be found) at home

Он часто бывает в театре—He often goes to the theatre

The future of *стать* (I *стану*) is frequently used to express the imperfective future

Что стану я делать? what shall I do?, or Что мне делать? (liter. What to me to do?) in the same sense is used more frequently

USEFUL VERBAL EXPRESSIONS

дождь идёт—it is raining (literally, rain is going)

снег идёт—it is snowing

град идёт—it is hailing

болит—it hurts

хватает—(Imperfective) It suffices

хватит—(Perfective) It will suffice.

довольно—that is sufficient

можно—it is possible. one may

Followed by an Infinitive, *можно* is the equivalent of the English "it is permitted to."

Можно говорить, курить—Speaking, smoking is permitted

нельзя—is the opposite to *можно*

нельзя разговаривать—talking is forbidden.

известно—it is known (that)

состоится—there will take place

состоит—it consists of

следует—it follows (that).

следует is also often used in the sense of "it is due" *мне следует с вас двадцать фунтов*—it is due to me from you twenty pounds (£20)

Before proceeding to the Irregular Verbs and the Perfective and Imperfective forms of essential verbs, it will be found advisable to go over again all that has been given about verbs up to this point. To start learning irregularities before the normal and regular forms are very well known would obviously be confusing.

IRREGULAR VERBS

The following is a list of essential Irregular Verbs and their principal parts, both in imperfective and perfective forms. The list is for reference purposes.

INFINITIVE	INDICATIVE						IMPERATIVE	
	Imperfective	Perfective	Present Imperf	Past Imperf	Past Perf	Fut. Perf	Imperf	Perf
беречь, to protect, preserve	беречь	сберечь	1st pers берёгу, 2nd pers берёшь	берёг	сберёг	сберёгу	берёги	сберёги
брать, to take	брать	взять	беру, берёшь	брал	взял	возьму	бери	возьми
везти, to carry, convey	везти	повезти	везу, везёшь	вез	повёз	повезу	вези	повези
вести, to lead, conduct	вести	повести	веду, ведёшь	вел	повёл	поведу	веди	поведи
давать, to give	давать	дать	даю, даёшь	давал	дал	дам	давай	дай
есть, to eat	есть	съесть	ем, ешь, ест ¹	едил, ел	съел	съем	ешь	съешь
ехать, to drive, to go (in a vehicle)	ехать	поехать	еду, едете, едут	ехал	поехал	поеду	—	поезжай
идти, to go	идти	пойти	иду, идёшь	шёл	пошёл	пойду	иди	пойди
класть, to put, lay	класть	положить	кладу, кладёшь	клат	положил	положу	клади	положи
лезть, to climb, creep	лезть	полезть	лезу, лезёшь	лез	полёз	полёзу	лезь	полёзь
ложиться, to lie down	ложиться	лечь	ложусь, ложитесь	ложился	лёг	лягу	ложись	ляг
мочь, to be able	мочь	смог	могу, можешь	мог	смог	смогу	—	—
нести, to bear, carry	нести	понести	несу, несёшь	нес	понёс	понесу	неси	понеси
печь, to bake	печь	испечь	пеку, печёшь	пёк	испёк	испекну	пекни	испекни
расти, to grow	расти	вырасти	расту, растёшь	рос	вырос	вырасту	расти	вырасти
сидеть, to sit down	сидеть	сесть	сажусь, садишься	сидел	сел	сяду	сиди	сиди
стеречь, to guard	стеречь	постеречь	стерегу, стережёшь	стерёг	постерёг	постерегу	стереги	постереги
спасать, to save	спасать	спасти	спасаю, спасаешь	спасал	спас	спасу	спасай	спаси
стричь, to shear, to cut (hair)	стричь	остричь	стригу, стрижёшь	стриг	остриг	остригу	стриги	остриги
тереть, to rub	тереть	потереть	тру, трёшь	тёр	потёр	потру	три	потри
трясти, to shake	трясти	потрясти	трясу, трясаешь	тряс	потряс	потрясу	тряси	потряси
умирать, to die	умирать	умереть	умираю, умираешь	умирал	умер	умру	умирай	умри

¹ Singular ² Plural

From the parts of each verb given above, all the other parts can be formed—see Rules on pages 2513–14.
 Note—The beginner need not, for a start, attempt to memorise this table but he should not fail to refer to it continually, until the parts are known.

IMPERFECTIVE FORM OF ESSENTIAL VERBS AND THE CORRESPONDING PERFECTIVE FORM

бежать—to run, побежать
 бить—to beat, побить
 благодарить—to thank, поблагодарить
 благословлять—to bless, благословить
 болеть—to be ill, заболеть (to fall ill)
 бояться—to fear, побояться
 брать—to take, взять
 брить—to shave, побрить
 бродить—to wander, побродить
 бросать—to throw, бросить
 будить—to waken, разбудить

быть—to be, побыть (to remain)
 вертеть—to turn, повертеть
 видеть—to see, увидеть
 внушать—to suggest, внушить
 водить—to lead, вести
 врать—to tell a lie, соврать
 вставать—to rise, встать
 встречать—to meet, встретить
 входить—to come in, войти
 выбирать—to choose, выбрать
 весить—to weigh, взвесить
 гнить—to rot, сгнить
 говорить—to speak, поговорить

грузить—to load, нагружать
 держать—to hold, подержать
 доставать—to get, obtain, достать
 думать—to think, подумать
 делать—to do, make, сделать
 ехать—to go, to drive, поехать
 ждать—to wait, expect, подождать
 желать—to desire, пожелать
 жить—to live, помить
 забавлять—to amuse, забавить
 заболевать—to become ill, заболеть
 зажигать—to light (lamp), to set on fire, зажечь
 закрывать—to shut, close, закрыть
 замечать—to perceive, заметить
 записывать—to inscribe, to record, записать
 заслуживать—to merit, deserve, заслужить
 звать—to call, invite, позвать
 знать—to know, узнать
 играть—to play, поиграть
 избирать—to elect, избрать
 извинять—to forgive, извинить
 извещать—to inform, известить
 класть—to put, положить
 кончать—to finish, кончить, окончить
 лгать—to tell lies, солгать
 мерить—to measure, измерить
 писать—to write, написать
 пить—to drink, выпить

платить—to pay, заплатить
 плакать—to weep, заплакать
 показывать—to show, показать
 покидать—to leave, покинуть
 покупать—to buy, купить
 понимать—to understand, понять
 портить—to spoil, испортить
 посылать—to send, послать
 предлагать—to offer, bid, предложить
 принимать—to accept, принять
 готовить—to prepare, приготовить
 продавать—to sell, продать
 петь—to sing, спеть
 резать—to cut, порезать
 слышать—to hear, listen, услышать
 спешить—to hasten, поспешить
 строить—to build, построить
 уметь—to be able to, суметь
 утомлять—to tire, утомить
 щадить—to spare, пощадить

NOTE : Although this list must be known—and as soon as possible—the student is advised not to attempt to memorise it immediately. He should, however, refer to it again and again, as it is important to know both forms of these common verbs.

LESSON 5

Adverbs, Prepositions, Conjunctions

An adverb is a word used to qualify any part of speech except a noun or pronoun.

In English most adverbs end in -LY. In Russian the usual adverbial ending is -О which replaces the adjectival endings (-ЫЙ, -ОЙ, -ИЙ).

Thus :

Adjective: хороший, good.

Adverb: хорошо, well.

'Soft' Adjectives take -Е instead of -О

Adjective: крайний, extreme

Adverb: крайне, extremely.

In other words, the adverb is generally the same as the nominative singular neuter of the short form of adjective.

The Instrumental Case of some Nouns can be used as an adverb.

вечером, in the evening.

днём, by day.

ночью, by night.

утром, in the morning

NOTE. The adverbs derived from the noun дом (house, home)

домой home (иду́ домой—I am going home).

дома—at home (он остаётся дома—he remains at home).

The Comparative and Superlative of adverbs are the same as the corresponding "short" form of the adjective.

хорошо, well; лучше, better; всего лучше, best.

NOTE. много—much; более—more, более всего—most;

мало—little; менее or меньше—less.

наиболее, the most (adverb)

наименее, the least (adverb)

Adverbs are often formed from adjectives by placing the prefix по- and changing the ending to -и

По-русски, in Russian

Говорите-ли вы по-русски? Do you speak Russian?

After

много, much, many

мало, few, little

немного, a few

сколько, How much? How many?

столько, as much, many

несколько, some

довольно, enough

Сколько жителей в Лондоне? How many inhabitants (are there) in London?

У него много денег. He has much money.

The noun which follows is in the genitive plural.

Past

Ударить, to strike, to hit; ударивший, having struck; ударив or ударивши.

Повернуть, to turn; повернувший, having turned; повернув or повернувши.

Повернувши к нему голову, он сказал—Having turned to him (the head), he said.

While adverbial in form, these participles express a mode of action.

LIST OF ESSENTIAL ADVERBS.

да, yes

нет, no.

ни ни, neither, nor.

в самом деле, indeed.

нисколько, not at all.

конечно, of course.

когда, when.

долго, how long.

где, where.

откуда, whence.

здесь, here.

там, there.

нигде, nowhere.

везде, everywhere.

сюда, hither

туда, thither.

отсюда, from here, hence.

оттуда, from there.

дома, at home.

домой, home.

хорошо, well.

скоро, quickly.

иначе, otherwise

наугад, at random.

нарочно, intentionally.

вчера, yesterday.

сегодня, to-day.

завтра, to-morrow.

после завтра, the day after to-morrow.

третьего дня, the day before yesterday.

ныне, at present.

теперь, now

прежде, before.

после, afterwards.

рано, early.

утром, in the morning.

вечером, in the evening

скоро, soon

мало, little.

много, much.

только, only.

почти, nearly.

весьма, очень, highly, very.

слишком, too, too much.

вовсе, entirely, at all.

чрезвычайно, exceedingly, excessively.

чтё-то, somewhat.

The above are of frequent occurrence and should be memorized.

ADVERBIAL PARTICIPLES.

Participles of Russian verbs have adverbial forms which are formed by dropping the participle endings: —щий in the present, and —щий, or —й in the past.

Present :

Люб-ить, to love, любящий, loving; любя, loving, while or by loving.

Говор-ить, to speak; говорящий, speaking; говоря speaking, when speaking.

Говоря в снег, я вспомнил Россию—While speaking of snow I remembered Russia.

PREPOSITIONS

A Preposition is a word placed before a noun to show in what relation the person or thing denoted thereby stands to something else.

In Russian, prepositions are very frequently used to make compound words (especially verbs) and, although such compound words may have a meaning which approximates to the simple meaning of the preposition plus the original word, yet the resultant meaning is so often entirely different and remote that it is advisable for the student to learn each compound as if it were an entirely new word. Thus :

Noun : мѣна, exchange, barter.

Compound nouns: перемена, alteration (пере, over).

измена, treason (из, out)

Compound verbs: переменить, to alter.

изменить, to betray.

Certain prepositions are joined with a word and become inseparable. They are :

воз-, воз-, or, взо-, meaning up.

низ-, down.

пере-, over.

раз-, asunder.

These four prepositions are only used for making compound words and require no particular case after them.

ALL OTHER RUSSIAN PREPOSITIONS GOVERN (that is must be followed by) A CASE, and some of them govern two or three cases, in accordance with the meaning to be conveyed

LIST OF ESSENTIAL PREPOSITIONS.

I. Governing one case only :

про, concerning Followed by the
через, over, across the
сквозь, through Accusative.

без, without

для, because of, for

из, out of

ради, for sake of

до, up to, until

от, from, away

у, at

Govern the Genitive.

над (sometimes *надо* for euphony) over, upon.
Governs the Instrumental.

при, near, in the presence of. Governs the Prepositional (or Locative).

без-, when combined with any word gives the equivalent of English opposite meaning
In-, un-, a-, less: *безбожник*—atheist.

из-, with a verb means out of (also "outright")

у-, with a verb means away, etc.

2. Prepositions which Govern Two Cases.

(a) Accusative and Instrumental

за, behind, beyond (with *verbs* conveys the meaning of both beginning and completion).

перед, *пéред*, before (time or place).

под, under.

(b) Accusative and Locative

в, во, in, into.

на, on, against.

о, об, concerning, around.

NOTE The Accusative conveys "motion to," the Instrumental or Locative "rest in" or "at."

(c) Genitive and Instrumental

между, among, between.

3 Prepositions which govern Three Cases.

(a) Accusative, Genitive and Instrumental

as (Acc)—in comparison, "about" (time)

from (Gen)—from, motion down from.

с (со) with (Instr)

with verbs,—simultaneity, movement downwards, completion.

(b) Accusative, Dative, and Locative

up to (Acc)

along (Dat.)

over, after (Loc.)

with verbs—repetition

NOTE По also changes an Imperfective verb into a Perfective one

Слушать - to listen. *Послушать* to listen (in perfective sense).

Examples: *Через забор*—across the hedge *Сквозь окно*—through the window *Без хлеба*—without bread *Для науки*—for the science. *Из комнаты*—out of the room *Ради человечества*—for the sake of humanity *До города*—up to the city. *От него*—from him. *У меня*—at (or by) me. *За стеною*—behind the wall, *Перед зарёй*—before the dawn. *Под столом*—under the table. *В доме*—in the house *Во вторник*—on Tuesday *На крыше*—on the roof *О человеке*—concerning the man. *Между друзьями*—among friends *Со стула*—from the chair *С книгой*—with a book *По дороге*—along the road.

Prepositions are very frequently recurring words, and the above list must be memorised.

CONJUNCTIONS

Conjunctions are words used for connecting either words or sentences. 'The man and the woman went home, but only the woman remained there' "and" and "but" are conjunctions. In Russian they have no particular rules governing their usage, and the student has merely to learn the list which follows.

LIST OF ESSENTIAL CONJUNCTIONS

а, and, but	чем, than
и, and	если-бы, if
и...и, both...and	потому что, because
ли, If, whether	то, then
ни...ни, neither...nor	то...то, sometimes...sometimes
но, but	чем...тем, the more...the more
или, или, or	что, that
ибо, because	только, only, merely
либо, either, or	нак, as, when
даже, even	хотя, although
ещё, still, yet	пусть
если, when, if	пусть
если, if	пусть
ниже, than	пусть
никогда, never	бы
чтобы, in order that	

INTERJECTIONS

Affirmation. Да, "Yes" Конечно, "Of course."

Assurance Ей, право, "Indeed." "Upon my word."

Aversion Фу, "Faugh!"

Call. Эй, гой, "Halloa!"

Compulsion Ну! *plur* ну-те, "Come!" Ну-же, "Now then."

Encouragement Славно! "Glorious." Ура, "Hurrah."

Grief Ах! Ох! "Ah!" "Oh!" Горько, бедá, увы, "Alas."

Indication Вот, "There" Вон, "Out."

Indignation Тыфу, "Fie"

Offer На, *plur* на-те, "Take it."

Pity Жаль, "What a pity"

Prohibition. Ст! Тс! "Hush" Молчать! "Silence!"

Refusal Нет, "No"

Repulsion: Прочь! "Off." Долой, "Away" Полно, "Cease," "stop."

Surprise А! Ах! "Ah!" Ва, "Oh"

Вот has a meaning equivalent to the French "Voilà"—Here is... .

NOTE It is hardly possible to compute the frequency of recurrence of the above expressions, but one may assert with some confidence that in both English and Russian (especially the latter) they are useful.

LESSON 6

Word Building

It is possible by means of endings or prefixes (some of which are used separately as prepositions) to vary the meaning of almost every part of speech in Russian :

PREFIXES

Вос, вос, воз indicates movement *up*: **ходить**, to walk; **восходить**, to arise.

Вы indicates movement *outwards*, separation: **брать**, to take; **выбрать**, to take out, to choose: **возить** (везти), to drive, carry: **вывоз**, the exportation; **вывозить** to export.

Низ (ниж), indicates downward movement: **нижложить**, to depose, to dethrone, (**ложить**, to lay down).

Пере, indicates change, movement across: **думать**, to think; **передумать**, to change one's thinking, i.e. mind, opinion: **бежать**, to run; **перебежать**, to run-across.

Раз (раз), indicates separation or undoing: **бить**, to strike, hit, **разбить**, to strike or break in pieces, defeat: **вязать**, to bind; **развязать**, to undo, to untie.

Also forms the perfective aspect of many verbs: **разбогатеть**, to be enriched; (**богатеть**, to become rich).

These prefixes can be added to hundreds of words (especially verbs) and form numerous other words or shades of meaning of one and the same word. The above prefixes are not used separately, or alone.

ENDINGS.

The following endings may be added to Nouns in order to change their meaning:

1. To Form Patronymics.

Masculine.

-ич, -ович, -евич, 'son of':

Томас (Thomas) Томич (Thomas's son).

Пётр (Peter) Петрович.

Алексей (Alexis) Алексеевич.

Feminine.

-инична, -овна, -евна, 'daughter of':

Фоминична, Петровна, Алексеевна (daughter of Thomas, etc.).

2. To Form Diminutives or Denote Affection.

Masculine and Feminine.

-енька, -инка, -очка, -ушка, -юшка, -ишка (little, dear): **пальчик**, dear father; **матинька**, dear mother; **сестричка**, little sister, from **сестра**—sister; **матинька**, little mother; **дедушка**, grand-father; **бабушка**, grand-mother; **бабушка**,

daddy, little father; **мальчишка**, little boy, from **мальчик**, boy.

Neuter

-ишко, -ушко: **ведришко**, little pail, from **ведро**, pail; **облачко**,¹ little cloud, from **облако**, cloud; **письмёшко**, little or brief letter, from **письмо**, letter.

3. To denote Depreciation or Derogation.

-ишка, -ишню, -онка, -онка: **ворышка**, little thief, from **вор**, thief; **домышко**, small (poor) house, from **дом**, house; **книжонка**, insignificant book, from **книга**, book; **избушка**, poor little peasant's house, from **изба**, hut, peasant's house.

4. To denote Increase in Size or Largeness.

-ища, -ище, -ища: **ручища**, large hand, from **рука**,¹ hand, arm; **волчища**, big wolf, from **волк**,¹ wolf; **домыща**, big house.

5. Indicating Place where an action is carried on.

-ня: **пеканья**, baker; **пеканья**, bakchouse.
-лицо: **учить**, to teach; **училище**, school.

6. Indicating the Inhabitant of a Place.

Masculine.

-ец: **Итальянец** an Italian
-анин: **Парижанин** a Parisian
-ик: **Прусси́к** a Prussian

Feminine.

-на, **Италья́нна**
-на, **Парижа́нна**
-чка, **Прусса́чка**

7 Indicating Physical or Mental Characteristics.

Masculine

-ун: (**derogatory**) **хвастун**, braggart
(verb **хвастать**, to boast).
-ик: (**fellow**) **добряк**, good sort

Feminine

хвасту́нья
-ячка: **добра́чка**

(adjective **добрый**, good).

8. To make Abstract Nouns.

-ина: **длинный**, long: **длина́**, length.
-ость: **рад**, glad. **радо́сть**, joy.
-ство: **богáтый** rich: **бога́тство**, wealth.
-а: **свободный**, free: **свобода́**, freedom.

9. The Following Endings are added to Nouns to Make Adjectives.

Ending	Noun	Adjective
-ий	жар , heat:	жа́рый , hot.
-ский	человек , man:	челове́ческий , ¹ human.
	лошадь horse:	лоша́чий , of horse, equine.
-истый	дух (plural)	душа́стый , ¹ perfumed.
		perfume :

¹ NOTE: "Guttural" consonants—**г, к, х**, when followed in derivative words by a soft vowel are mostly changed into corresponding "hissing" consonant—**ж, ч, ш**.

—янный дерево, wood: деревянный, wooden.
 —ов, (—ов) царь, king; tsar. царь and царю, king's.
 —ин, иный дядя, uncle: дядин, uncle's. royal.
 лошадь, horse: лошадиный, of horse.

Refer to pages 2520-21, Prepositions. As we have seen, certain prepositions when put before verbs have the effect of modifying the aspect and sometimes change the entire meaning of the verb. The same refers to some other parts of speech as well. Consider the following:

БЕЗ (БЕЗ)—WITHOUT, expresses the opposite to simple word:

беспокоить, to trouble, to disquieten, (noun покой means 'rest,' 'quietness').

В (ВО)—IN, AT, indicates movement inwards:

войти, to go in (йти, to go).
 вносить, to bring in (носить, to carry).

ДО—TO, UP TO, indicates attainment of end or completion of action.

догнать, to rejoin, overtake.
 договорить, to finish speaking (говорить, to speak).
 дописать, to finish writing (писать, to write).

ЗА—BEYOND, AFTER indicates situation beyond:

забorsкий, beyond the seas (море, the sea).

ИЗ (ИС)—FROM, OUT OF:

изгнать, to expel (гнать, to drive)

НА—ON denotes action on a surface:

написать, to write (upon).
 напиться, to drink one's full, to get drunk. (пить, to drink).

НАД—OVER, ABOVE:

надпись, the inscription, endorsement.
 надзор, the surveillance.

О, (ОБ, ОБО)—ABOUT, means movement round an object:

обходить, to go round (ходить, to walk, go).

ОТ—FROM, denotes separation, movement away:

отливать, to flow out, отлив, the outflow, ebb, low tide (лить, to pour).
 отделить, to detach, separate (делить, to divide).
 отговорить, to dissuade.

ПО—AFTER, ABOUT, indicates indefinite duration of action:

поговорить, to speak a little
 or perfective aspect of verbs:
 полюбить, to fall in love (любить, to love).

ПОД—UNDER, means motion under or towards:

подходить, to approach.
 or addition:
 подлить, to pour in (more).

ПРЕД—BEFORE, IN FRONT OF, priority:

предсказать, to foretell (сказать, to say, to tell).

ПРИ—AT. Indicates approximation, addition:

приводить, to bring to (водить, to lead).
 приехать, to arrive (not on foot) приезд, the arrival (ехать, to go, to ride).
 прилив, the inflow, high tide.

ПРО—ABOUT, means passage through, across:

проходить, to pass, to go through.
 or completion of action:
 прочитать, to read through (читать, to read).
 проиграть, to lose at game (играть, to play).

С (СО)—WITH, denotes simultaneity, cooperation:

современники, contemporary (время, the time).
 or forms the Perfective aspect:
 сделать, to have made. (делать, to do, to make).

У—AT, WITH, denotes removal:

улетать, to fly away (летать, to fly).
 or removal of part:
 урезать, to cut a piece (резать, to cut)
 or perfective aspect, or end of action:
 умереть, to starve to death (морить, the same in imperfective aspect).
 украсть, to have stolen (красть, to steal)
 or increase:
 усилить, to strengthen (сила, the strength, force).

NOTE:

This chapter on Word Building is intended to be for reference. Yet it is of great importance. The student will realise that, with the prefixes and suffixes given above, and the vocabulary of essential words, the key is provided to the meaning of thousands of words. When the elements of grammar have been mastered, the only serious problem remaining is that of vocabulary, of which the principles of word-building are an essential.

FORMS OF ADDRESS AND NAMES IN RUSSIAN

The word **Вы** is the general equivalent for the English word **YOU** and it is the form of address which should always be used by the foreigner in addressing adults. It requires the verb to be in the second person plural: *Говорите-ли вы по-английски?*—Do you speak English?

Ты thou, is used between relations, intimate friends, in addressing children, animals, the Deity (and pre-revolution in speaking to servants, or by officers speaking to privates etc.)

Умешь-ли ты писать?—Can you write? (to a child).

The plural of **Ты** is **Вы** and is used to address two or more people to whom **Ты** would apply.

EQUIVALENTS FOR MR., SIR, ETC.

Mr. and Sir are expressed by **ГОСПОДИН**, Mrs. and Lady—by **ГОСПОЖА** which are used with surnames only: **ГОСПОДИН ИВАНОВ**—Mr. Ivanoff. **ГОСПОЖА**

ПЕТРОВА—Mrs. Petroff. When persons are not intimate enough to address each other by Christian names [**ПОСЛУШАЙ, ИВАН**—Look here (listen) John] the usual form of address is the interlocutor's first name coupled with his or her patronymic, which means "son, or daughter of." **ИВАН СЕРГЕЕВИЧ** (or shorter **СЕРГЕИЧ**)—John Serge's son. **МАРИЯ ПЕТРОВНА**—Mary, Peter's daughter. This is less formal than «**ГОСПОДИН ИВАНОВ**»—Mr. Ivanoff.

In Soviet Russia to address someone or to be addressed as **ГОСПОДИН, ГОСПОЖА** is interpreted as a sign of bourgeois mentality or counter-revolution and is to be avoided. Its place is taken by **ГРАЖДАНИН, ГРАЖДАНКА**—Citizen, Citizeness, or among Communists (members of the party) or State employees or workmen—**ТОВАРИЩ**—'comrade,'—for both sexes.

ГОСПОДИН and **ГРАЖДАНИН** are shortened in written address to **Г.** or **Г-Н**; **ГОСПОЖА** into **Г-ЖА**, **ГРАЖДАНКА** into **Г-НА**.

In pre-Revolutionary times, servants, peasants etc., used to address their masters or superiors as **БАРИН**—Mr., Sir, my Lord, **БАРИНЯ**—Mrs., my Lady, **БАРЫШНЯ**—miss, my lady, without adding either the Christian name or the surname.

CORRESPONDENCE

The date is written thus: 10-го ИЮЛЯ 1955 г.—of 10th July 1955, and is pronounced always as ordinal genitive. **ДЕСЯТОГО ИЮЛЯ**—of the tenth of July,

the year being pronounced as cardinal for every component figure except the last which is ordinal—**ТЫСЯЧА ДЕВЯТЬСОТ ТРИДЦАТЬ ТРЕТЬЕГО ГОДА**—thousand nine hundred thirty OF THIRD year.

(1) A formal opening: **МИЛОСТИВЫЙ ГОСУДАРЬ**—(no longer used in Soviet Russia, as being too reminiscent of the "old regime")—Dear Sir (literally—Gracious Lord). **МИЛОСТИВАЯ ГОСУДАРЫНЯ**—(ditto)—Dear Madam. **МИЛОСТИВЫЕ ГОСУДАРИ**—plural to a firm.

(2) Less formal, and used in the U.S.S.R.: **МНОГОУВАЖАЕМЫЙ ГОСПОДИН / ГРАЖДАНИН / ИВАНОВ**—Much esteemed Mr. (Citizen) Ivanoff. **МНОГОУВАЖАЕМАЯ АННА ВАСИЛЬЕВНА**—Much esteemed Anna Basil's daughter.

(3) A familiar opening: **ДОРОГОЙ СЕРГЕЙ СЕМЕНОВИЧ**—Dear Serge son of Simon. An intimate opening: **ДОРОГОЙ ИВАН**—Dear John. **МИЛАЯ ТАНЯ**—Cherished Tania (pet-name for Tatiana).

(4) A formal ending. **С СОВЕРШЕННЫМ ПОЧТЕНИЕМ, С СОВЕРШЕННЫМ УВАЖЕНИЕМ**—yours faithfully, truly (literally—with perfect esteem, consideration).

(5) Less formal: **ПРЕДАННЫЙ ВАМ / ТЕБЕ /**—Devoted to you (thou).

(2) and (4) are the openings and endings which should be used until the student is thoroughly familiar with Soviet usage.

LESSON 7

Vocabulary: Days, Months, Names

For practical purposes, it is necessary to know the pronouns, the numbers, certain adverbs, prepositions and conjunctions (all given in earlier Lessons) the names of the days of the week, the months and seasons, a few common idioms—and the words in large type in the Alphabetical List in Lesson 8. The student will then have a practical working vocabulary of about 1,600 words. Other words in small type in the Alphabetical List may afterwards be memorized. Used in accordance with the rules of grammar, it will provide the student with a vocabulary of several thousand words which not only enables him or her to speak fluently, and rarely be at a loss, but also to pick up the average Russian book or newspaper confident that most of it can be understood.

It has been ascertained that a beginner can memorize 10-20 new words of a foreign language in an hour; after a few hours' practice, it should be possible to memorize up to fifty new words per day. Thus, the Essential Vocabulary of Russian may be assimilated in about three months.

Know the Vocabulary Both Ways—the English for each Russian word, and the Russian for each English: one

DAYS OF THE WEEK, MONTHS, etc. TIME.

Minute, минута (-ы, -ы)	Week, неделя (-и, -и)
Hour, час (-а, -ы)	Month, месяц (-а, -ы)
Day, день (дня, дни) (masc.)	Year, год (-а, -ы and -а)

SEASONS.

Spring, весна (-й, -ы)	Autumn, осень (-и, -и) (fem.)
Summer, лето (-а, -а)	Winter, зима (-й, -ы)

DAYS OF THE WEEK.

Sunday, Воскресенье (-я, -я)	Thursday, Четверг (-а, -а)
Monday, Понедельник (-а, -и)	Friday, Пятница (-ы, -ы)
Tuesday, Вторник (-а, -и)	Saturday, Суббота (-ы, -ы)
Wednesday, Среда (-й, -ы)	

MONTHS OF THE YEAR.

January, Январь (-й)	May, Май (-я)
February, Февраль (-й)	June, Июнь (-я)
March, Март (-а)	July, Июль (-я)
April, Апрель (-й)	August, Август (-а)

September, Сентябрь (-А) November, Ноябрь (-Я)
October, Октябрь (-А) December, Декабрь (-А)

The names of the months are all masculine.

(The letters in brackets indicate the genitive singular and nominative plural. These words are all declined like nouns with corresponding endings.)

PROPER NAMES

NAMES OF COUNTRIES.

U.S.S.R. (Union of Soviet Socialist Republics). С.С.С.Р. Союз Советских Социалистических Республик.

Russia,	Россия.
England,	Англия.
Great Britain,	Великобритания.
France,	Франция.
Germany,	Германия.
Italy,	Италия.
Greece,	Греция.
Turkey,	Турция.
United State of America,	Соединённые Штаты Америки.
China,	Китай.
Japan,	Япония.
Belgium,	Бельгия.
Spain,	Испания.

NATIONALITY.

Adjectives

Russian, Русский
English, Английский
French, Французский
German, Немецкий
Italian, Итальянский
American, Американский
Chinese, Китайский
Japanese, Японский
Spanish, Испанский
Turkish, Турецкий
Greek, Греческий

Nouns

Русский (-ная). (чанна).
Англичанин, Englishman
Француз, Frenchman,
Немец, etc.
Итальянец
Американец
Китаец
Японец
Испанец
Турок
Грек

NAMES OF SOME IMPORTANT U.S.S.R. INSTITUTIONS.

АГИТОТДЕЛ (Агитационно-пропагандистский Отдел), Agitation and Propaganda Dept.

БЮРОБИН (Бюро по обслуживанию иностранцев), Office for Assisting foreigners.

ВОНС (Всесоюзное Общество культурной связи с заграницей), All Union Society for Cultural Relations with foreign countries.

ГИЗ (Государственное Издательство), State Publishing House.

NOTE. As will be seen from the above, there is a tendency in the U.S.S.R. to telescope the sometimes long names of state institutions into short words. There are hundreds of such words or abbreviations, of which the following may be found useful.

ВСНХ, Supreme Economic Council.

Soviets.

ВСЦИК, All Union Central Executive Committee of

ВЦСПС, All Union Central Council of Trade Unions.

ЗАВ (Заведующий), A manager, chief, head.

ЗАВМОНТ, Office Manager. ГОСБАНК, State Bank

КОЛХОЗ, Collective farm.

КОМ, A committee or commission; also a Commissar or Commander.

КОМИНТЕРН, Communist (Third) International.

НАРБАНК, People's Bank.

НАРКОМ, People's Commissar.

НАРСУД, People's Court.

НЭП, New Economic Policy.

ОРА, All-Russian Union of Workers Associations.

ПОЛПРЕДСТВО, Embassy of the USSR.

РАЙ, Used as a prefix for 'regional' (Районный) Райсовет, Regional Council.

РКП, Russian Communist Party.

РОСКОМБАНК, Russian Commercial Bank.

РСФСР, Russian Socialist Federal Soviet Republic.

СНК, Council of People's Commissars.

СОВ, Used as a prefix for Совет (Soviet), Сограбётники, a Soviet worker.

СОВХОЗ, Soviet state farm.

SOME COMMON EXPRESSIONS AND IDIOMS.

Я иностранец. I am a foreigner.

Мое имя (Джонс). My name is (Jones).

Я живу в I live at

Я встречаю затруднение в I am having difficulty in

Как вы называете это по русски? What do you call this in Russian?

Здравствуйте (от доброе утро, добрый день). Good morning, good afternoon,

Добрый вечер, спокойной ночи. Good evening, good night.

Как вы поживаете? Хорошо. How are you? Well.

Спасибо (благодарю Вас). Большое спасибо. I thank you. Many thanks.

Простите, пожалуйста. Извините. I beg your pardon. Excuse me.

Пожалуйста. If you please.

Это неважно. That does not matter.

Будьте добры (от любезны) помочь мне. Would you kindly help me.

Пожалуйста, мне. Kindly show me.

Заходите (if on foot), заезжайте (if not on foot), за мною . . . Fetch me . . .

Какой курс на фунты сегодня? What is the rate of exchange for pounds to-day?

Я ничего не могу поделать. I cannot help it.

Я очень тороплюсь. I am in a great hurry.

Где я мог бы разменять английские деньги? Where can I get English money changed?

Хорошо, ладно. All right.

Сколько . . . ? (от сколько стоит . . . ?) How much is . . . ?

LESSON 8

The Essential Vocabulary

In the list which follows some Russian words are printed in large letters. This indicates that they are important, and should be mastered first.

The letters in brackets after each noun

indicate the Genitive Singular and Nominative Plural, which should always be learnt with the noun. Personal pronouns, numerals, days of the week, and months are given in Lessons 4 and 7.

А, а.

Абсолютный	Absolute.
Авось	utter, sheer
Автоматический	Perhaps, may be
Автомобиль	Automatic
Автономия (и, и)	Automobile, motor-car
Авторитет (а, ы)	Autonomy, independence
Автор (а, ы)	Authority
Агент (а, ы)	Author
Адвокат (а, ы)	Agent, representative
Администрация (и, и)	Advocate, lawyer
Адрес (а, а)	Administration
Ад (а)	Address
Азбука (и, и)	Hell
Актёр (а, ы)	Alphabet
Антив (а, ы)	Actor
Ант (а, ы)	Assets
Акция (и, и)	Deed (document)
Акционер (а, ы)	The share (business)
Аллея (и, и)	Shareholder
Аллея (и, и)	Avenue, drive
Алмаз (а, ы)	Diamond
Амбар (а, ы)	Warehouse, barn
Апеллировать	To appeal
Апельсин (а, ы)	Orange
Аппарат (а, ы)	Apparatus
Аппетит (а, ы)	Appetite
Аптека (и, и)	Chemist's shop
Аргумент (а, ы)	Argument
Аренда (ы, ы)	Lease
Арест (а, ы)	Arrest, attachment
Арифметика (и, и)	Arithmetic
Арка (и, и)	Arch
Армия (и, и)	Army
Артист (а, ы)	Artist (actor)
Архитектор (а, а)	Architect
Ассоциация (и, и)	Association
Атака (и, и)	Attack
Атаковать	To attack
Аукцион (а, ы)	Auction

Б, б.

Баба (ы, ы)	Peasant (woman)
Бабушка (и, и)	Grandmother
Базар (а, ы)	Bazaar, market
Базис (а, ы)	Basis
Баланс (а, ы)	Balance (at bank)
Банка (и, и)	Pot, jar
Банкрот (а, ы)	Bankrupt
Банк (а, и)	Bank
Баня (и, и)	Bath-house
Барышня (и, и)	Miss, young lady
Бархат (а, ы)	Velvet
Басня (и, и)	Fable
Башман (а, а)	Shoe
Бег (а, а)	Course
Бегать¹	To run
Бегство (а)	The flight
Бедá (ы, ы)	Misfortune
Бедный	Poor
Бедрó (а, бедра)	Hip
Бегать²	To run
Безнаказанность	Impunity
Безумный (и, и)	Silly, mad
Без	Without (-less)
Белый	White
Бельё (я, по plural)	Linen (personal)
Берег (а, а)	Shore, coast
Беречь	To guard
Бес (а, ы)	Devil
Беседа (ы, ы)	Conversation
Беспокоить	To trouble
Бесполезный	Useless
Библиотека (и, и)	Library
Билет (а, ы)	Ticket
Битва (ы, ы)	Battle
Бить	To strike beat
Благо (а, а)	Good, welfare
Благодарить	To thank

БЛАГОДАРНОСТЬ	Thanks, gratitude
Благодарный (и, и)	Grateful
Благоприятный	Favourable
Благородный	Gentle, noble
Благословение (я, я)	Blessing
Благословлять	To bless
Блédный	Pale
Блестеть	To shine
Близний	Near
Блюдо (а, а)	Dish
Бог (а, и)	God
Богатый	Wealthy
Богатство (а, а)	Wealth
Бóдрствовать	To be awake
Бой (я, я)	Battle
Бойкий	Clever, smart
Бок (а, а)	Side
Болóто (а, а)	Marsh, swamp
Боль (и, и)	Pain
Больница (ы, ы)	Hospital
Больной	Ill, sick
Большинство	Majority
Большой (а, а)	Large, big
Больше всего	Most
Болéзнь (и, и)	Sickness, disease
Болéзненный	Sore, ailing
Болеть	To be ill
Борóд (ы, ы)	Beard
Борт (а, а)	Side (of a ship)
Борьба (ы)	Struggle
Бóчка (и, и)	Barrel
Бояться	To fear
Брáн (а, и)	Marriage
Бранить	To blame, abuse
Брат (а, я)	Brother
Брать	To take
Брить, Бриться	To shave
Бритва (ы, ы)	Razor

Бровь (и, и)	Eyebrow
Брод (а, ы)	Ford
Бродить	To wander
БРОСАТЬ	To throw
Бросаться	To rush
Брошюра (ы, ы)	Pamphlet
БРЮКИ	Trousers
Будить	To wake up
БУДУЩИЙ	Future
Буква (ы, ы)	Letter
Букет (а, ы)	Bouquet
БУЛАВНА (и, и)	Pin
БУЛОЧНИК (а, и)	Baker
БУМАГА (и, и)	Paper
БУРЯ (и, и)	Storm
БУТЫЛКА (и, и)	Bottle
Бухта (ы, ы)	Bay
БЫВШИЙ	Former
БЫН (а, ы)	Bull
БЫСТРЫЙ	Swift, rapid
БЫТЬ	To be
Бюро (not declined)	Office, bureau

В, в.

ВАГОН (а, ы)	Railway
ВАЖНЫЙ	Important
ВАЖНОСТЬ (и)	Importance
	no plural
Ванса (ы) no plural	Boot-polish
Ванна (ы, ы)	Bath
ВАШ	Your
ВЕЛИКИЙ	Great
ВВЕРХ	Upwards
Вверх	Up, above
Ввозить	To import
Вдали	Off, far
ВДВОЕ	Twice
ВДОВА (ы, ы)	Widow
ВДОВОЛЬ	Enough, pl
ВДОЛЬ	Along
ВЕДРО (а, ведра)	The bucket

Вдохновение (я, я)	Inspiration
Великолепный	Splendid
ВЕЗДЕ	Everywhere
Везти	To convey
ВЕН (а, а)	Century
Вексель (я, а)	Bill of exchange
ВЕЛИКИЙ	Great
ВЕРА (ы, ы)	Belief, faith
Веревка (и, и)	String
Верить	To believe, trust
Верный	Faithful
ВЕРОЯТНЫЙ	Probable
ВЕРТЕТЬ	To turn
ВЕРХНИЙ	Upper
ВЕС (а, а)	Weight
Веселый	Gay, merry
Весить	To weigh
Весло (а, весла)	Oar
Вести	To lead
Весы (plural only)	Scales
ВЕСЬ	All
Ветвь (и, и)	Branch
ВЕТЕР (тра, тра)	Wind
Ветчина (ы)	Ham
ВЕЧЕР (а, а)	Evening
ВЕЩЬ (и, и)	Thing, object
Вещество (а, а)	Stuff, substance
Вещественный	Material (adj.)
ВЗАД	Back, backwards
ВЗГЛЯД (а, ы)	View, opinion
Взор (а, ы)	Look
Взятка (и, и)	Bribe
Взывать	To appeal
ВИД (а, ы)	Appearance
Вибрация (и, и)	Vibration
ВИДЕТЬ	To see
ВИЗИТ (а, ы)	Visit
ВИЛКА (и, и)	Fork
Вина (ы, ы)	Fault
Вино (а, а)	Wine
Винovatый	Guilty

Винт (а, ы)	The screw
Висеть	To hang
Висок (скá, смй)	Temple (head)
Вклад (а, ы)	Deposit
Включать	To include
ВКУС (а, ы)	Taste
Владелец (а, ы)	Proprietor
ВЛАДЕТЬ	To possess
ВЛАСТЬ (и, и)	Power, authority
Влияние (л, я)	Influence
Влиять	To affect
ВМЕСТЕ	Together
ВМЕСТО	Instead
ВНЕЗАПНЫЙ	Sudden
ВНЕ	Outside
ВНИЗУ	Below, downstairs
ВНИЗ	Down, downwards
ВНИМАНИЕ (я)	Attention
ВНОВЬ	Again
ВНУТРИ	Inside, within
Внушать	To suggest
Внушение (я, я)	Suggestion
ВОДА (ы, ы)	Water
Водить	To lead
ВОЖДЬ (я, я)	Chief, leader
Возбуждать	To excite, arouse
ВОЗВРАТ (а, ы)	Return
Возвышать	To raise
Возделывать	To cultivate (soil)
ВОЗДУХ (а, и)	Air
ВОЗИТЬ	To carry, transport
ВОЗЛЕ	Beside, near
Возобновлять	To renew
ВОЗМОЖНЫЙ	Possible
ВОЗРАСТ (а, ы)	Age
ВОЙНА (ы, ы)	War
ВОЙСКО (а, а)	Army, troops
ВОКРУГ	Around
Вол (а, ы)	Ox, bull
Волк (а, и)	Wolf

NOTE. 1. 2. The verb 'to run' appears twice in page 2526, once the perfective and once imperfective aspect. It will be seen in this and later pages that sometimes one, sometimes the other and sometimes both, are found in this Vocabulary. The student should assume that the aspect given is the more commonly used. Verbs with more than two aspects, or irregular, will be found on pages 2518-19.

Волна́ (ы, ы)	W	Всю́ду	Everywhere	Генера́л (а, ы)	General
Вѳлос (а, ы and а)	H	Всѳкий	Every, each everybody	Герѳй (я, и)	Hero
Вообража́ть	To imagine	Втече́ние	During	ГЛАВА́ (ы, ы)	Chapter, chief
ВОПРО́С (а, ы)	Question	Входи́ть	To go in, enter	ГЛАВНЫЙ	Main, principal
ВОР (а, ы)	Thief	ВЧЕРА́	Yesterday	Глаго́л (а, ы)	Verb
ВОРОТА́ (plural)	Gate	В, ВО	In, to	Гладный	Smooth
ВОРОТНИ́К (а, и)	Collar	ВЫ	You	ГЛАЗ (а, а)	Eye
Воск (а)	Wax	Выбира́ть	To select, to choose	Глина (ы, ы)	Clay
Воскреса́ть	To arise	ВЫБОР (а, ы)	Choice	Глотáть	To swallow
Воспита́ние (я)	Education, upbringing	Вѳборы (plural)	The elections	Глубина́ (ы, ы)	Depth
Воспита́нник (а, и)	Pupil	Вѳвоз (а, ы)	Export	ГЛУБО́КИЙ	Deep
ВОСТО́К (а)	The East	Вѳгода (ы, ы)	Profit, advantage	ГЛУПЫ́Й	Foolish
Восто́чный	Eastern, oriental	Выздо́равливать	To recover	ГЛУХО́Й	Deaf
Воти́рывать	To vote	Выйгры́вать	To win, gain	ГЛЯДЕ́ТЬ	To look
ВПЕРЕДИ́	Before, in front	Выйгрыш (а, и)	Gain (n.)	Гнить	To rot
ВПЕРѳД	Forward, forth	Вымо́гать	To extort	ГНЕ́В (а)	Anger
Впечатле́ние (я, л)	Impression	Выполни́ть	To fulfil	ГОВОРИ́ТЬ	To speak
ВПОЛНЕ́	Completely	Вѳпуск (а, и)	The issue	Говори́ть по телефо́ну	To telephone
ВПРА́ВДУ	Really, truly	Выража́ть	To express, utter	ГОВЯДИ́НА (ы)	Beef
Впредь	Henceforth	ВЫСО́КИЙ	High, tall	ГОД (а, ы or а)	Year
ВПРО́ЧЕМ	Besides	ВЫСОТА́ (ы, ы)	Height	ГODOVÓЙ	Annual, yearly
ВРАГ (а, и)	Enemy	Вѳставка (и, и)	The shot	ГОЛОВА́ (ы, ы)	Head
Вражда́ (ы, no plural)	Hostility	Вѳстрел (а, ы)	The shot	ГО́ЛОД (а)	Hunger, famine
Врать	To tell lies	Высу́шивать	To drain, dry	ГО́ЛОС (а, а)	Voice, vote
ВРАЧ (а, и)	Physician	Выть	To weep, howl	Го́лый	Naked
ВРЕД (а, no plural)	Harm, injury	Вѳсший	Supreme	Гонора́р (а, ы)	Fee
Вреди́ть	To hurt, injure	Вытѳгивать	To extend	Гора́ (ы, ы)	Mountain
ВРЕ́МЯ (ени, ена́)	Time	Выче́ркивать	To cancel	Горб (а, ы)	Hump
Вруча́ть	To hand over	Вычисля́ть	To calculate	Горды́й	Proud
ВСѳ	All, everything	ВЫШИ́НА (ы)	Height	ГОРДО́СТЬ	Pride
ВСЕГДА́	Always	Вья́снять	To explain	ГО́РЕ (я, no plural)	Sorrow
ВСЕМѳРНЫЙ	Universal	Вязáть	To bind, knit	ГО́РЛО (а, а)	Throat
ВСЕЦѳЛО	Entirely	Г, Г.		ГО́РОД (а, а)	Town, city
ВСЕЦѳЛЬНЫЙ	Entire	ГÁВАНЬ (и, и)	Port, harbour	Горожа́нин (а, а́не)	Townsmán
ВСКѳРЕ	Soon	ГАЗЕ́ТА (ы, ы)	Newspaper	Горчи́ца (ы)	Mustard
ВСЛУХ	Aloud	Газ (а, ы)	Gas	ГОРШѳН (шкá, и)	Pot
ВСТАВА́ТЬ	To get up	Гармо́ния (и, и)	Harmony	Го́рький	Bitter
Встреча́ть	To meet	Гвоздь (я, и)	Nail, peg	ГОСПОДИ́Н (а, дá)	Gentleman, Mr
Вступáть	To enter	ГДЕ	Where	Гѳспита́ль (я, я́)	Hospital
		ГДЕ-БЫ́ ТО́	Anywhere	ГОСПОЖА́ (ы, я́)	Lady, Mrs
		НИ́ БЫЛО́			

Гость (я, и)	Guest
Гостиница (ы, ы)	Hotel, inn
Готовить	To prepare
ГОТОВЫЙ	Ready
Град (а)	Hail, hailstone
Градус (а, ы)	Degree
ГРАЖДАНИН	Citizen
(а, ане)	
Грамматика (и, и)	Grammar
ГРАНИЦА (ы, ы)	Frontier
ЗАГРАНИЦЕЙ	Abroad
Грация (и, и)	Grace, charm
Графство (а, а)	County
Гребень	Comb (n.)
(бня, и)	
Гребешён	
(шнá, и)	
Грести	To row
Греть	To warm
Грех (á, и)	Sin
Гриб (á, ы)	Mushroom
Гроб (а, ы)	Coffin
ГРОМКИЙ	Loud
ГРОМ (а, ы)	Thunder
ГРУДЬ (и, и)	Breast
Груз (а, ы)	Freight, cargo
Грузить	To load
Группа (ы, ы)	Group
ГРУСТЬ (и)	Sadness
Грустный	Sad
Груша (и, и)	Pear
ГРЯЗЬ (и, и)	Dirt, mud
Грязный	Dirty
Губá (ы, ы)	Lip
Губка (и, и)	The sponge
ГУСТОЙ	Thick
Гусь (я, и)	Goose

Д, д.

да	Yes
ДАВАТЬ	Give, grant
Давить	To press, crush
ДАВНО	Long ago
ДАЖЕ	Even
ДАЛЕКИЙ	Far, distant

И ТАК ДАЛЕЕ	Et cetera (etc.)
ДАЛЬ (и, и)	(И.Т.Д.) Distance
ДАЛЕЕ	Further
ДАМА (ы, ы)	Lady
ДАР (а, ы)	Gift, present
ДВЕРЬ (и, и)	Door
ДВИГАТЬ (—ся)	To move
ДВИЖЕНИЕ (я, я)	Movement
	motion
ДВОР (á, ы)	Court, yard
Двойной	Double, two-fold
ДЕВА (ы, ы)	Maid
ДЕВОЧКА (и, и)	Girl (child)
Девушка	Young girl
ДЕЙСТВИТЕЛЬНЫЙ	Real, actual
ДЕЙСТВИТЕЛЬНО	Indeed, really
ДЕЙСТВИЕ (я, я)	Action
ДЕЙСТВОВАТЬ	To act, to operate
	to do, to make
ДЕЛАТЬ	
Деликатный	Delicate
ДЕЛО (а, á)	Work, business
ДЕНЬГИ (plural)	Money
ДЕНЬ (дня, дни)	Day
Департамент (а, ы)	Department
Депеша (и, и)	Despatch, telegram
Депозит (а, ы)	The deposit
Дерево (а, ы)	Tree
ДЕРЖАТЬ	To hold, to keep
Дерзать	To dare
Десерт (а, ы)	Desert
Детали	Details (pl.)
ДЕШЕВЫЙ	Cheap
Дейательный	Active
Диний	Wild
Диктовать	To dictate
Дипломат (а, ы)	Diplomat
ДИТЯ (—тáти, дéти)	Child
Дичь (и)	Game (bird, etc.)
Дли́нá (ы, ы)	Length
Дли́нный	Long
ДЛЯ	For
ДНО (а, ы)	Bottom

ДО	Till, until
Добавлять	To add
Добавление (я, я)	Addition
Добродетель (и, и)	Virtue
Доброта́ (ы)	Kindness, goodness
ДОБРЫЙ	Good, kind
Добы́вать	To earn, win
Доверенность (и, и)	Power of attorney
Доверие (я)	Confidence
Доверять	To trust
Довершать	To complete
Довод (а, ы)	An argument
Довольно	Sufficient, enough
Довольный	Content
ДОГОВОР (а, ы)	Agreement, contract
ДОЖДЬ (я, и)	Rain
Дойть	To milk
Доказательствá	The proof
Доказывать (а, а)	To prove
ДОНАЧИВАТЬ	To finish (off)
ДОКЛАД (а, ы)	Report
Доложить	To announce, to report
ДОКТОР (а, á)	Doctor
ДОЛГИЙ	Long
ДОЛГ (а, á)	Debt, duty
Долженствовáть	Must, have a duty to
Должник (á, и)	Debtor
Должный	Due
Долина́ (ы, ы)	Valley
Доллár (а, ы)	Dollar
ДОЛÓЙ	Away, down (with)
До́ля (и, и)	Share, part
ДОМ (а, á)	House, home
Домáшний	Domestic
ДОНЬИ́НЕ	Till now
Допрашивать	To question, examine
Допрос (а, ы)	Examination, questioning
ДОПУСКА́ТЬ	To admit, allow
ДОРО́ГА (и, и)	Way, route, road
ДОРОГО́Й	Dear, expensive
Досáда (ы, ы)	The spite, vexation
Доскá (я, и)	Board
ДОСТАВÁТЬ	To procure, to obtain

Доставлять	To afford, deliver, supply
Достаточный	Sufficient
Достигать	To reach
Достоинство (а)	Worth, dignity
Достойный	Worthy
Доход (а, ы)	Income
ДОЧЬ (—чери, чери)	Daughter
Драгоценность (и, и)	Jewel
Драгоценный	Precious
Дрожать	To shiver
ДРУГОЙ	Other, another
ДРУГ (а, —зья)	Friend
ДРУЖБА (ы)	Friendship
Дружелюбный	Kindly
Дружеский	Friendly
ДУМАТЬ	To think
Дуб (а, ы)	Oak
Дурак (а, ы)	The fool
ДУРНОЙ	Bad
Дуть	To blow
Дух (а, и)	Spirit
Духи (plural)	Perfume
ДЫМ (а, ы)	The smoke
Дыра (ы, ы)	Hole
ДЫХАНИЕ (я)	Breath
Дьявол (а, ы)	Devil
ДЮЖИНА (ы, ы)	Dozen
Дюйм (а, ы)	The inch
ДЯДЯ (и, и от ья)	Uncle
Е, е.	
ЕДВА	Hardly
Единица (ы, ы)	Unity
Единственный	Only, sole
ЕДИНЫЙ	One, single
ЕЖЕДНЕВНО	Daily, every day
Езда (ы)	The ride
Ездить	To travel, ride
ЕСЛИ	If
Естественный	Natural
Есть	To eat
ЕЩЕ	Still, more, yet

Ж, ж.

ЖАЖДА (ы)	Thirst
ЖАЛОБА (ы, ы)	Complaint
ЖАЛОВАНИЕ (я, я)	Wages, pay
ЖАЛОСТЬ (и)	Pity
ЖАЛЕТЬ	To regret
ЖАРА (ы, ы)	Heat
ЖАТВА (ы, ы)	Crop, harvest
ЖДАТЬ	To wait, expect
ЖЕЛАНИЕ (я, я)	Wish, desire
Желанный	Willing
ЖЕЛАТЬ	To desire, to wish
ЖЕЛТЫЙ	Yellow
ЖЕЛЕЗНАЯ ДОРОГА	The railway
ЖЕЛУДОН (а, и)	Stomach
ЖЕЛЕЗО (а)	Iron
ЖЕНЩИНА (ы, ы)	Woman
ЖЕНА (ы, жены)	Wife
ЖЕНИТЬСЯ	To marry a wife
ЖЕНИТЬБА (ы, ы)	Marriage, wedding
ЖЕНСКИЙ	Female
Жертва (ы, ы)	Sacrifice
ЖЁСТКИЙ	Hard
ЖЕСТОКИЙ	Cruel
ЖЕЧЬ	To burn
Живописец (сца, ы)	Painter, artist
ЖИВОТНОЕ (ого, ые)	Animal
Живость (и)	Vivacity, liveliness
ЖИВЬЕМ	Alive
ЖИДКИЙ	Liquid
ЖИЗНЬ (и, и)	Life
ЖИР (а, ы)	Fat (n.)
Жирный	Fat (adj.)
ЖИТЬ	To live
Жребий (я, и)	Lot, allotment
ЖУРНАЛ (а, ы)	Journal, magazine
З, з.	
ЗА	For
Забавы (ы, ы)	Amusement,

Забавлять	To amuse
Забастовка (и, и)	Strike (of workmen)
Забёр (а, ы)	Fence
ЗАБОТА (ы, ы)	Care, trouble
ЗАБЫВАТЬ	To forget
Завидовать	To envy
Зависимость	Dependence
ЗАВИСЕТЬ	To depend
Зависть (и)	Jalousy
ЗАВОД (а, ы)	Factory, works
Завоевание (я, я)	Conquest
Завоевывать	To conquer
ЗАВТРАК (а, и)	Breakfast, lunch
ЗАВТРА	To-morrow
ЗАВТРАНАТЬ	To lunch, breakfast
Заведывать	To manage
Завеса (ы, ы)	Curtain
ЗАВЕЩАНИЕ (я, я)	Will, testament
Заглавие (я, я)	Title (of book)
Заговор (а, ы)	Conspiracy
Загораживать	To enclose, fence
ЗАДАЧА (и, и)	Task, problem
ЗАДЕРЖИВАТЬ	To detain, retain
Задуманный	Cordial, hearty
ЗАЁМ (яма, ы)	Loan
Заказ (а, ы)	Order (of goods)
Заключать	To conclude, decide
Заключение (я, я)	Conclusion
ЗАКОН (а, ы)	Law
Закоченелый	Stiff, numb
ЗАКРЫВАТЬ	To shut
Зал (а, ы)	Hall
Залив (а, ы)	Gulf
Залог (а, и)	Pledge, mortgage
ЗАМОК (ика, ы)	Lock (n.)
ЗАМЕСТИТЕЛЬ (я, и)	The substitute
Заметка (и, и)	Mark, note
ЗАМЕТИТЬ	To mark, observe
Замешательство	Confusion
Занавес (а, ы) (а, а)	Curtain
ЗАНИМАТЬ	To occupy

Занимать (деньги)	To borrow	ЗНАНИЕ (я, я)	Knowledge	Импульс (я, я)	The impulse
ЗАНЯТИЕ (я, я)	Business, job	ЗНАТЬ	To know	ИМУЩЕСТВО (я, я)	Property
ЗАНЯТЫЙ	Busy	ЗНАЧИТЬ	To signify, mean	ИМЯ (имени, —я)	Name
ЗАПАД (я)	The West	ЗОЛОТО (я)	Gold	ИНАЧЕ¹	Otherwise
Западный	Western	Золотой	Golden	ИНДИВИДУУМ	Individual
ЗАПАС (я, я)	Store, stock	Зонт (я, я)	Umbrella	ИНОГДА (я, я)	Sometimes
Запах (я, я)	Smell, scent	Зрелище (я, я)	Spectacle, scene	ИНОЙ	Other, another
Записывать	To record	Зрение (я)	Eye-sight	Инцидент (я, я)	Incident
ЗАПРЕЩАТЬ	To prohibit	ЗУБ (я, я)	Tooth	ИНСТРУМЕНТ (я, я)	Instrument, tool
ЗАРАНЕЕ	Beforehand	И, И.			
ЗАРЯ (я, зори)	Dawn				
Заряжать	To load (weapons)	И	And	Интерес (я, я)	Interest
ЗАСЛУГА (я, я)	Merit	ИБО	For, since, because	ИНТЕРНАЦИОНАЛЬНЫЙ	International
Заслуживать	To deserve	Игла (я, я)	Needle	ИСКАТЬ	To seek, search
Заседание (я, я)	Session	Игрушка (я, я)	The toy	Исключать	To exclude, except
ЗАТРУДНЕНИЕ (я, я)	Difficulty	Игра (я, я)	Game	Исключение (я, я)	Exception
ЗАЧЕМ	Why	Играть	To play	Искра (я, я)	Spark
Защита (я, я)	Defence	ИДЕАЛ (я, я)	The ideal	Искренний	Sincere
Защищать	To defend, protect	ИДЕЯ (я, я)	Idea	ИСКУССТВО (я, я)	Art
ЗВАТЬ	To call, invite	ИЗБЕГАТЬ	To avoid, to escape	ИСПУГАННЫЙ	Afraid
ЗВЕЗДА (я, звезды)	Star	ИЗБИРАТЬ	To elect, to choose	Испытание (я, я)	The trial, examination
Зверь (я, я)	Beast	ИЗБРАНИЕ (я, я)	Election, choice	ИСТИНА (я, я)	Truth
ЗВУК (я, я)	Sound	ИЗВЕЩАТЬ	To inform	ИСТИННЫЙ	True
Звучать	To sound	ИЗВЕЩЕНИЕ (я, я)	Notification	ИСТОРИЯ (я, я)	History
ЗДЕСЬ	Here	Извинение (я, я)	Excuse, apology	Источники (я, я)	Source
ЗДОРОВАТЬСЯ	To greet	ИЗВИНЯТЬ	To excuse, forgive	Исход (я, я)	Issue, outcome
ЗДОРОВЬЕ (я)	Health	ИЗВНЕ	From outside	ИТОГ (я, я)	Total
Здоровый	Healthy	Издавать	Publish	ИТТИ	To go
ЗЕЛЁНЫЙ	Green	Излагать	To state	ИСТОЩАТЬ	To waste, exhaust
ЗЕМЛЯ (я, я)	Earth	Излечить	To heal, to cure	К, К.	
ЗЕМЛЕДЕЛИЕ (я)	Agriculture	ИЗЛОЖЕНИЕ (я, я)	The statement		
Зеркало (я, я)	Mirror	Излюбленный	Favourite	К (я)	To, towards
Зерно (я, зерна)	Grain, corn	Измена (я, я)	Treason	Набав (я, я)	The hog, wild boar
ЗИМА (я, я)	Winter	ИЗОБРАЖАТЬ	To represent	НАЖДЫ	Each, every
ЗЛО (я)	Evil	Изобрести	To invent	НАЗЫВАТЬСЯ	To seem
Змея (я, я)	Snake	Изобретатель (я, я)	Inventor	НАК	How, as
Знак (я, я)	Sign, mark	Изощрение (я)	Grace, elegance	НАН—НИБУДЬ	Anyway
ЗНАКОМИТЬ	To acquaint	ИЗ	From	НАМЕНЬ (я, я)	Stone
ЗНАКОМСТВО	Acquaintance	ИЛИ	Or	НАМЕРА (я, я)	Camera (photo) chamber cell
ЗНАМЯ (—шени, зна)	Standard	ИМЕТЬ	To have, possess	Навал (я, я)	Canal
				Напать	To drop, drip

¹ Also pronounced *иначе*

Капитал (а, ы)	Capital	Колокол (а, о)	Bell	Крайний	Extreme
Капитализм (а, ы)	Capitalism	Колéно (а, о)	Knee	Красивый	Handsome, pretty
Капитан (а, ы)	Captain	Колóнна (ы, ы)	Column	Красить	To paint
КАПЛЯ (и, и)	Drop (n.)	Кольцó (о, а)	Ring	КРАСНА (и, и)	Colour, paint (n.)
Карандаш (о, о)	Pencil	Комáр (о, о)	Gnat	КРАСНЫЙ	Red
Карéта (ы, ы)	Carrriage, coach	Комéдия (и, и)	Comedy	КРАСОТА (ы, ы)	Beauty
КАРМАН (а, ы)	Pocket	Комéта (ы, ы)	Comet	Кредит (а, ы)	Credit
КАРТА (ы, ы)	Card, map	Коммиссар (а, ы)	Commissar	Кредитор (а, ы)	Creditor
КАРТИНА (ы, ы)	Picture	Комитет (а, ы)	Committee	КРЕПНИЙ	Firm, strong
Картофель (я)	Potatoes and potato	Коммерсант (а, ы)	Merchant	Крест (о, ы)	The cross
КАСАТЬСЯ	To touch, concern	Коммёрческий	Commercial	Крестить	To baptize
Касса (ы, ы)	Till, cash	КОМНАТА (ы, ы)	Room	КРЕСТЬЯНИН	Peasant
КАЧЕСТВО (а, а)	Quality	КОМПАНИЯ (и, и)	Company, gathering	Крик (а, и) (а, йно)	Cry
Кашель (шля)	Cough	Конвención (и, и)	Convention	КРИЧАТЬ	To cry
Кашлять	To cough	Конвэрт (а, ы)	Envelope	КРОВАТЬ (и, и)	Bed
КВАРТИРА (ы, ы)	Flat, apartment	Конкурéncia (и, и)	Competition	Кровь (и, и)	Blood
Кипéть	To boil	КОНЕЦ (ица, ы)	End	КРОМЕ	Except, besides
Кирпич (о, о)	Brick	Континéнт (а, ы)	Continent	Кружевр (а, о)	Lace
Кислый	Acid, sour	Кóнсул (а, ы)	Consul	КРУГ (а, о)	Circle
Кладбище (а, а)	Churchyard	Кóнтóра (ы, ы)	Office	Кружить	To twist, to circle around
КЛАСС (а, ы)	Class	Контóрна (и, и)	Desk (in office)	КРУГЛЫЙ	Round
КЛАСТЬ	To lay, put	Контрáнт (а, ы)	Contract	КРУПНЫЙ	Big
Клёточка (и, и) (в счёт)	Mesh (also cell)	Конфисковать	Confiscate	Крушение (я, я)	Accident, shipwreck
КЛИМАТ (а, ы)	Climate	Концэрт (а, ы)	Concert	Крыса (ы, ы)	Rat
Клиэнт (а, ы)	Client	КОНЧАТЬ	To finish	Крыло (о, ыя)	Wing
Клонить	Bend, incline	КОНЬ (я, и)	Horse	КРЫТЬ	To cover
Клуб (а, ы)	Club, club-house	Копáть	To dig	Крыша (и, и)	Roof
КЛЮЧ (о, о)	Key	КОПИЯ (и, и)	Copy	Крюк (о, о)	Hook
КНИГА (и, и)	Book	КОРАБЛЬ (я, я)	Ship	КТО	Who
Ковёр (овá, ы)	Carpet	Кóрень (рия, рии)	Root	КТО-ЛИБО	Somebody
Кóврик (а, и)	Rug	Корзýна (ы, ы)	Basket	КТО-НИБУДЬ	Anybody
КОГДА	When	Корýчневый	Brown	КТО-ТО	Somebody
КОЕ—ГДЕ	Somewhere	Корридóр (а, ы)	Corridor, passage	Куэин (а, ы)	Cousin
Кóжа (и, и)	Skin, leather	Кормить	To feed, nourish	Купéц (ица, ы)	Merchant
Кóзёл (злá, ы)	The goat	Корóва (ы, ы)	Cow	КУПИТЬ	To purchase
КОЛИЧЕСТВО (а, а)	Quantity	Корóль (я, я)	King	Кýрица (ы, ры)	Hen
Колéя (я, я)	The track	Корóна (ы, ы)	Crown	Курс (а, ы)	Course
Коллэгия (и, и)	College, collegium	КОРОТКИЙ	Short, brief	Курс (дóнер)	Rate of exchange
КОЛЕСО (о, еса)	The wheel	КОСТЬ (и, и)	Bone	КУСОН (сна, о) —	Piece, bit, lump
Колóдец (дца, —ы)	Well, spring	Костюм (а, ы)	Costume, dress	Кусать	To bite
Колéбание (я, и)	Vibration, hesitation	Кот (о, ы)	(He) cat	Куст (о, ы)	Bush
		Котёл (тлá, ы)	The kettle, boiler		
		КОТОРЫЙ	Which		
		Кóфе (not declined)	Coffee		
		Кóшка (и, и)	(She) cat		
		Край (я, я) (конéц)	Margin, top		
		КРАЙ (странá)	Country, land		

Нухарка (и, ш)	Cook (fem.)
Нухия (и, ш)	Kitchen
Нуча (и, ш)	Hear
НУШАТЬ	To eat

Л, л.

ЛАВНА (и, ш)	Shop
Лáгерь (я, я)	Camp
Лáзить	To climb
Лáмпа (ы, ы)	Lamp
Лáять	To bark
Лгáть	To tell lies
Лéбедь (я, и)	Swan
Лев (львá, ѝ)	Lion
Лéгкий	Light, easy
Лёд (льдá, ы)	Ice
Леденить	To freeze
Лéжáть	To lie down
Лéзвие (я, я)	The blade
Лéзть	To climb
Лекарство, (а, а)	Medicine, drug
Лéкция (и, и)	Lecture
ЛЕНИВЫЙ	Lazy, idle
Лéнта (ы, ы)	Ribbon, band
ЛЕС (а, á)	Wood, forest
Лéстница (ы, ы)	Staircase, ladder
ЛЕТÁТЬ	To fly
Лжé-	Pseudo, false
ПИ . . . ЛИ	Whether . . . or, either . . . or
Либеральный	Liberal
ЛИБО	Or
Ливень (-вия, и)	The shower
Лимон (а, ы)	Lemon
Линия (и, и)	Line
Лист (á, ѝ ог ѝя)	Leaf, sheet
Лить	To pour
Лихорадка (и, и)	Fever
ЛИЦО (á, а)	Face, person
Личность (и, и)	Personality, person
Личный	Personal
Лишь	Only
Ловкий	Clever, skilled
Лодка (и, и)	Boat

Лóжь (лжи, no plural)	Lie, falsehood
Лóжка (и, и)	Spoon
Лóжный	False, wrong
ЛОМАТЬ	To break
Лóпáться	To burst
Лóшáдь (и, и)	Horse
Лук	Onion
Лúковница (ы, ы)	The bulb
ЛУНА (ѝ, ы)	Moon
Луч (á, я)	Beam, ray
ЛУЧШЕ	Better
ЛУЧШИЙ	Best
ЛЮБéЗный	Kind, amiable
Любимый	Darling, beloved
ЛЮБИТЬ	To love, like
Любоваться	To admire
Любóвини (а, и)	Lover
ЛЮБóй	Any
ЛЮДИ (plural)	People, men

М, м.

МАГАЗИН (а, ы)	Shop
МАЛЫЙ	Small
МАЛЕР-ЬНИЙ	Any
МАЛО	Little, few
МАЛЬЧИК (а, и)	Boy
Мáма (ы, ы)	Mama
Мануфáктурá (ы, ы)	Manufacture (n) manu- factured goods
Марáть	To soil
МАРНА (и, и)	Postage-stamp, trade mark
Мáсло (а, á)	Butter, oil
Мáсса (ы, ы)	Mass, heap
Мáтерий (á, á)	Continent
Мáтериáл (а, ы)	Material
Мáтериáльный	Material (adj.)
МАТéРИЯ (и, и)	Matter
МАТЬ (ери, ери)	Mother
Мáчта (ы, ы)	Mast
МАШИНА (ы, ы)	Machine, engine
МГНОВéНИЕ (и, и)	Moment, instant
Мéбель (и)	Furniture
Медвéдь (я, и)	Bear
МЕДИНАМéНТ (а, ы)	Medicine (remedy)
МЕДИЦИНА	Medicine (science)
МÉДЛИТЬ	To delay, linger
МÉДЛЕННЫЙ	Slow
Мёд (а)	Honey
МЕДЬ (и)	Copper, brass
МÉЖДУ	Between, among
МЕЖДУНАРОДНЫЙ	International
Мéльница (ы, ы)	Mill
МéНА (ы)	Exchange, barter
МéНЬШЕ	Less
МéНЕЕ	
МéНЬШИНСТВО	Minority
МéНЯТЬ (á, á)	To change
МéРА (ы, ы)	Measure
Мёрзнуть	To freeze, get frozen
МéРИТЬ	To measure
МÉРТВЫЙ	Dead
МéСТО (а, á)	Place
Мéстный	Local
Мéстоположéние (я, я)	Situation
МéСЯц (а, á ог ѝ)	Month, moon
Метáлл (а, ы)	Metal
МéТОД (а, ы)	Method
МЕТР (а, ы)	Metre
Мох (а, á)	Fur
МИГ (а, и)	Moment
МИЛЛИОН (а, ы)	Million
МИЛЫЙ	Charming, lovely
Мíля (и, и)	Mile
Мíнна (ы, ы)	Mine (coal, etc.)
Минерáл (а, ы)	Mineral
Мини́стр (а, ы)	Minister
МИНУТА (ы, ы)	Minute
МИР (а)	Peace
МИР (а, ѝ)	World, universe
МÍРЬ	

Младенец (мла, м)	Baby	Музыка (м)	Music	Наказание (н, н)	Punishment
МНЕНИЕ (н, н)	Opinion	Муча (н, н)	Torture	НАКАЗЫВАТЬ	To punish
МНОГИЙ	Many	Муча (н)	Meal, flour	НАКАЧИВАТЬ	To pump
МНОГО	Plenty, much	Муравей (мр, м)	Ant	НАКЛАДНАЯ (нл, нл)	Invoice
МНОГОЧИСЛЕННЫЙ	Numerous	Муха (н, н)	Fly	НАКОНЕЦ	At last, finally
Могила (м, м)	Grave (n.)	Мыло (а)	Soap	НАЛОГ (а, н)	Tax, rate
МОГУЩЕСТВО (а)	Power	МЫСЛЬ (н, н)	Thought, idea	НАМЕН (а, н)	Suggestion, hint
Мода (м, м)	Fashion	Мыть	To wash	НАМЕРЕВАТЬСЯ	To intend
МОЖЕТ-БЫТЬ	Perhaps	Мягкий	Soft, tender	НАМЕРЕНИЕ (н, н)	Intention, purpose
Мозг (а, м)	Brain	Мясник (м, м)	Butcher	НАМЕРЕННО	Intentionally, purposely
МОКРЫЙ	Wet	Мясо (а, м)	Flesh, meat	НАНИМАТЬ	To hire, engage
Молитва (м, м)	Prayer	Мяч (м, м)	Ball (for games)	Нападать	To attack
МОЛОДЁЖЬ (м)	Young people	Н, н.		Нападению (н, н)	Attack, assault
Молиться	To pray	НА	On, upon	Наперенёс	Contrary, despite
МОЛОДОЙ	Young	НАБЛЮДАТЬ	To observe	НАПИТОК (-тка, м)	Drink (n.)
МОЛОДОСТЬ (н)	Youth	НАВЕРХУ	Above	НАПОЛНИТЬ	To fill
МОЛОКО (м)	Milk	НАВРЯД	Hardly	НАПОМИНАТЬ	To remind
Молоток (тка, м)	Hammer	Навык (а, н)	Habit	НАПРАВЛЯТЬ	To guide, direct
Молчаливый	Silent	Навещать	To visit	НАПРАВЛЕНИЕ (н, н)	Direction
МОЛЧАНИЕ (н)	Silence	Нагой	Bare, naked	НАПРОТИВ	Opposite, on the contrary
МОМЕНТ (а, м)	Moment	Награда (м, м)	Reward	НАРОД (а, м)	Folk, people, nation
МОНЕТА (м, м)	Coin, money	НАДЕЖДА (м, м)	Hope	НАРОДНЫЙ	Popular, people's
Монумент (а, м)	Monument	НАДЕЖНЫЙ	Sure, reliable	НАРУЖНЫЙ	Exterior, external
МОРАЛЬ (н)	Morality	НАДЕЯТСЯ	To hope	НАРУШАТЬ	To break, contravene
Моральный	Moral	Надзор (а, м)	Control, supervision	Нарядный	Trim, neat, decked up
МОРЕ (н, м)	Sea	НАДЛЕЖАЩИЙ	Proper, due	Населять	To colonise, inhabit
Мороз (а, м)	Frost	НАД	Above	НАСЕКОМОЕ (ого, м)	The insect
МОСТ (а, м)	Bridge	НАДОЕДАТЬ	To bother, to bore	НАСЕЛЕНИЕ (н, н)	Population
МОТОР (а, м)	Motor	НАЕДИНЕ	Alone (with somebody)	Насилие (н, н)	Violence
Мочь	To be able	НАЁМ (йма)	Hire, rent (n.)	НАСВОЗЬ	Through and through
МОЩЬ (н)	Power	НАЖИВА (м, м)	Gain	НАСКОЛЬКО	As far as, as much as
МОЩНЫЙ	Powerful, strength	НАЖИВАТЬ	To earn, gain, make money	Наслаждение (н, н)	Delight
МУДРОСТЬ (н)	Wisdom	НАЗАД	Behind	Наследник (а, н)	Heir
МУДРЫЙ	Wise	НАЗАД	Back, backwards	Наследственный	Hereditary
МУЖ (а, м)*	Husband	Название (н, н)	Name, title	Наследство (а, а)	Heritage, succession
МУЖЕСТВЕННЫЙ	Brave	НАЗНАЧАТЬ	To determine, fix, nominate, appoint	НАСТАВЛЯТЬ	To instruct
МУЖЕСТВО (а)	Courage	НАЗЫВАТЬ	To name, call	НАСТАВЛЕНИЕ (н, н)	Instruction
МУЖИК (м, м)	Peasant	НАИЛУЧШИЙ	Best	НАСТАИВАТЬ	To insist
МУЖСКОЙ	Male	НАИМЕНЬШИЙ	Least	НАСТОЛЬКО	As much as

* Выйти замуж—To marry a husband.

НАСТРОЕНИЕ (я, я)	Humour, mood	НЕСПОСОБНЫЙ	Unable, incapable	О, о.	
НАТУРА (ы, ы)	Nature	НЕСТИ	To carry, bring		
НАУНА (и, и)	Science	НЕСЧАСТЛИВЫЙ	Unfortunate,	О, обо, об	Абoт
НАУЧНЫЙ	Scientific	НЕСЧАСТНЫЙ	unhappy	Оба	Both
НАХОДИТЬ	To find, discover	НЕТ	No, not, not any	Обвинять	To accuse
НАЦИЯ (и, и)	Nation	НЕЧТО	Something	Обед (а, ы)	Dinner
НАЦИОНАЛЬНЫЙ	National	НИ . . . НИ	Neither . . . nor	Обезьяна (ы, ы)	Monkey
НАЧАЛО (а, а)	Beginning	НИГДЕ	Nowhere	Обеспечить	To secure, guarantee
НАЧАЛЬНИК (а, и)	Chief, head	НИЖЕ	Below	Обещать	To promise
НАЧИНАТЬ	To begin, start	НИЖНИЙ	Low, lower	Обитать	To lodge, reside, live
НЕ	Not	НИЗКИЙ	Low	Обозрение (я, я)	The review
НЕБО (а, есá)	Heaven, sky	Низкий (морально)	Base, evil	Облако (а, á)	Cloud
Небрежность (и, и)	Negligence	НИКОГДА	Never	Облегчение (я, я)	The relief
Невинность (и, и)	Innocence	НИКТО	Nobody	Облегчить	To relieve, facilitate
НЕВОЗМОЖНЫЙ	Impossible	Нить (и, и)	Thread	Обмен (а, ы)	Exchange, barter
НЕГДЕ	Nowhere	Нитка (и, и)	Thread	Обнаруживать	To discover
НЕДАВНИЙ	Recent	НИЧТО	Nothing, naught	Ободра́ть	To cheer up
НЕДЕЛЯ (и, и)	Week	НО	But	Обозрение	Review
НЕДОСТАТОК (тка, и)	Lack, deficiency	НОВОСТЬ (и, и)	News	Обонять	To smell
НЕЖЕЛИ	Than	НОВЫЙ	New	Оборонять	To defend
НЕНИИ	One, some, a certain	Ногá (и, и)	Leg, foot	Оборона (ы, ы)	Defence
НЕКОГДА	Once	Ноготь (гтя, и)	Nail (of finger or toe)	Образ (а, ы)	Image, shape
НЕКОТОРЫЙ	Some, certain	НОЖ (á, и)	Knife	Образ (а, á) (икона)	Image, ikon
НЕКТО	Someone	Ножницы (plural)	Scissors	Образец (ца, ы)	Model, pattern, sample
Неловкий	Awkward	НОРМАЛЬНЫЙ	Normal	Образовать	To form, educate
НЕЛЬЗЯ	One cannot, must not	Нос (а, ы)	Nose	Обратно	Back, inversely
НЕМНОГО	A little	Носок (ска, и)	The sock, toe (of shoe, etc.)	Обстоятельство (а, а)	Circumstance
Немой	Dumb	НОСИТЬ	To bear, wear	Обсуждать	To discuss
Ненавидеть	To hate	НОСИЛЬЩИИ	Porter	Обсуждение	Discussion
НЕОБХОДИМЫЙ	Necessary	НОТА (ы, ы)	Note	Обувь (и, и) (я, я)	Foot-wear
Необычный	Unusual	НОЧЬ (и, и)	Night	Обхождение (я, я)	Treatment
НЕПОСРЕДСТВЕННЫЙ	Immediate	НРАВ (а, ы)	Character	Обхват (а, ы)	The grip
НЕПРАВИЛЬНЫЙ	Wrong	НУЖДА (ы, ы)	Need, necessity	Обширный	Vast
НЕПРИЯТЕЛЬ (я, и)	Enemy	НУЖДАТЬСЯ	To want, need	Общественность (и, и)	Community
Нерв (а, ы)	Nerve	НУЖНЫЙ	Necessary	Общественный	Public, social
НЕСКОЛЬКО	Several, a few	НУМЕР (Но́мер, а, á)	Number	Общество (а, а)	Society
НЕСМОТРЯ	In spite of	НЫНЧЕ. НЫНЕ	Now, at present	Общий	Common, general
НЕСОМНЕННО	Doubtless	Нырять	To dive	Объединять	To unite
		Нюхать	To smell (also to sniff)	Объект (а, ы)	Object
				Объем (а, ы)	Volume, size, bulk
				Объявлять	To declare
				Объявление (я, я)	Declaration

ОБЪЯСНЯТЬ	To explain	ОПЯТЬ	Again	Открытие (я, я)	Discovery
ОБЫКНОВЕННЫЙ	Ordinary	ОРГАНИЗАЦИЯ (и 'и')	Organization	Отличительный	Distinctive
ОБЫЧАЙ (я, и)	Use, custom	ОРДИНАРНЫЙ	Ordinary	Относительный	Relative
ОБЫЧНЫЙ	Usual	Орёл (рлá, ъ)	F eagle	Отношение (я, я)	Relation, connexion
ОБЯЗАННОСТЬ (и, и)	Duty, obligation	ОРИГИНАЛ (а, ъ)	Original	ОТРИЦАТЬ	To deny
ОБЯЗАТЬ (и, и)	To oblige	ОРУДИЕ (я, я)	Instrument, tool	ОТСУТСТВУЮЩИЙ	Absent
Овца (ѳ, ѳ)	Sheep	Орех (а, и)	Nut	ОТСУТСТВИЕ (я, я)	Absence
Огонь (гнá, ѳ)	Fire	ОСВОБОЖДАТЬ	To deliver, release	ОТСЫЛАТЬ	To refer, to send away
ОГРАНИЧИВАТЬ	To limit	ОСЛОЖНЯТЬ	To complicate	ОТСЮДА	Hence
ОДЕВАТЬ	To dress	Осматривать	To inspect	ОТЧЕГО	Why
ОДИН	One, a	ОСНОВА (ѳ, ѳ)	Foundation, basis	ОТЧЁТ (а, ѳ)	Report, account
ОДНАКО	However	ОСНОВНОЙ	Fundamental, essential	ОТ	From, of
ОДОБРЕНИЕ (я, я)	Approval	ОСНОВАТЬ	To found, establish	ОФИЦЁР (а, ѳ)	Officer
ОДОБРЯТЬ	To approve	ОСОБА (ѳ, ѳ)	Person	ОФИЦИАЛЬНЫЙ	Official
ОДОЛЖАТЬ	To lend, oblige	ОСОБЕННЫЙ	Particular	Охотиться	To hunt
ОДОЛЖЕНИЕ (я, я)	Favour	ОСОБЫЙ	Special, separate	ОЧЕНЬ	Very
Ожидание (я, я)	The waiting	ОСТАВАТЬСЯ	To remain, stay	ОЧЕРЕДЬ (по очереди) (и, и)	Turn (in turn)
ОЖИДАТЬ	To await	ОСТАВЛЯТЬ	To leave	ОШИБКА (и, и)	Error, mistake
ОЗАБОЧЕННЫЙ	Anxious	Останавливать	To stop, interrupt	П, п.	
Озеро (а, озера)	Lake	ОСТРОВ (а, á)	Island	ПАЙ (я, ѳ)	Share, portion
ОЗНАЧАТЬ	To denote	ОСТРЫЙ	Sharp	ПАДАТЬ	To fall
ОКАЗЫВАТЬ	To show	Осуждать	To condemn	ПАКЕТ (а, ѳ)	Package, parcel
ОКЕАН (а, ѳ)	Ocean	Осуществлять	To realize, carry through	ПАКОВАТЬ	To pack
ОКНО (а, а)	Window	ОСЯЗАТЬ	To touch, feel	Палатка (и, и)	Tent
ОКОЛО	About	ОТБОР (а, ѳ)	Selection	Палец (льца, ѳ)	Finger, toe, thumb
ОКОНЧАТЕЛЬНЫЙ	Final	Отверстие (я, я)	Hole, opening	Палика (и, и)	Stick
ОКРУГ (а, а)	District	ОТВЕТ (а, ѳ)	Answer	ПАМЯТЬ (и)	Memory
ОПАСАТЬСЯ	To fear	ОТВЕТСТВЕННОСТЬ	Responsibility	Памятник (а, и)	Monument
ОПАСНОСТЬ (и, и)	Danger	ОТВЕЧАТЬ (и, и)	To answer, reply	Папироса (ѳ, ѳ)	Cigarette
Операция (и, и)	Operation	ОТДАЧА (и, и)		ПАР (а, ѳ)	Steam
ОПИСАНИЕ (я, я)	Description	ОТДЫХ (а, и)	Rest, repose	ПАРА (ѳ, ѳ)	Pair, couple
ОПИСЬ (и, и)	List	ОТДЕЛЬНЫЙ	Separate, individual	Параллель (и, и)	Parallel (n.)
ОПИСЫВАТЬ	To describe	ОТЁЛЬ (я, и)	Hotel	ПАРК (а, и)	Park
ОПОРА (ѳ, ѳ)	Support	ОТЕЦ (тцá, ѳ)	Father	ПАРЛАМЕНТ (а, ѳ)	Parliament
ОПРАВДЫВАТЬ	To justify, acquit	ОТЗЫВАТЬ	To recall	ПАРТИЯ (и, и)	Party
ОПРОВЕРГАТЬ	To contradict	Отказывать	To refuse	Пáрус (а, á)	Sail
ОПРЯТНЫЙ	Clean, neat	Откровенный	Frank	Пáсха (и)	Easter
ОПЫТ (а, ѳ)	Experience, experiment	ОТКРЫВАТЬ	To open, discover	Паук (á, ѳ)	Spider
				Пахать	To plough

Пахнуть	To smell (intransitive)	ПИСЬМОВОДИТЕЛЬ	Secretary	Повиноваться	To obey
Пачкать	To soil	ПИТЬ (я, и)	To drink	ПОВТОРЯТЬ	To repeat
Пепел (пла)	Ashes	ПИТЬЕ (я, я)	The drink, beverage	ПОВЕСТЬ (и, и)	Novel
ПЕРВОНАЧАЛЬНЫЙ	Original, primary	ПИЩА (и)	Food	ПОГОДА (ы, ы)	Weather
ПЕРВЫЙ	First	Пищеварение (я, я)	Digestion	ПОД	Under
ПЕРЕВОД (я, ы)	Translation, transfer	Плавание (я, я)	Swimming	Подарок (риа, и)	Present, gift
ПЕРЕВОДИТЬ	To translate, to transfer	ПЛАВАТЬ	To swim, to float	ПОДАТЬ (и, и)	Rate, tax
ПЕРЕД	Before	Платье (ени)	To weep, to cry	Подбородок (диа, и)	Chin
		План (а, ы)	Flame	Подвластный	Dependent subordinate
ПЕРЕМЕНИТЬ	alteration To alter, change	Планета (ы, ы)	Plan, scheme	ПОДДАННЫЙ (ого, ые)	Subject (adj and n)
Перемирие (я, я)	Armistice, truce	ПЛАТА (ы, ы)	Planet	ПОДДЕРЖИВАТЬ	To support
ПЕРЕПИСКА (и, и)	Correspondence	ПЛАТЕЖ (ежа, и)	Fee, charge	ПОДЛЕЖАТЬ	To be subject to
Перерыв (а, ы)	Interruption	ПЛАТИТЬ	Payment	Подлинник (а, и)	Original
Переходить	To cross over	ПЛАТОН (тка, и)	To pay	Поднимать	To lift up, raise
ПЕРИОД (а, а)	Period	Платформа (ы, ы)	Handkerchief	ПОДНОС (а, ы)	The tray
ПЕРО (я, ыя)	Leather, pen	Платформа (ы, ы)	Platform	ПОДПИСЫВАТЬ	To sign
Персики (а, и)	Peach	ПЛАТЬЕ (я, я)	Clothes, garment	Подробность (и, и)	Detail
ПЕРСОНА (ы, ы)	Person	Плечо (я, и)	To spit	Подушка (и, и)	Cushion, pillow
Перчатка (и, и)	Glove	ПЛЕМЯ (ени, а)	Stock, race	Подчинять	To submit, subjugate
ПЁС (пса, ы)	Dog	ПЛОД (я, и)	Should	ПОЖАЛУЙ	Perhaps
ПЕСЕНЬ (и, и)	Song	ПЛОД (я, и)	Fruit	ПОЖАЛУЙСТА	Please
Песок (ска, и)	Sand	Плодородный	Fertile	ПОЖАР (а, ы)	Fire
Петля (и, и)	Stitch, noose	Плоский	Hat	Позади	Behind
Петух (а, и)	Cock	ПЛОХОЙ	Bad	ПОЗВОЛЕНИЕ (я, я)	Permission
ПЕТЬ	To sing	ПЛОЩАДЬ (и, и)	Square (n)	ПОЗВОЛИТЬ	To permit, to let
ПЕЧАЛЬ (и, и)	Sadness	Плуг (а, и)	Plough (n)	ПОЗДНО	Late
Печать (и, и)	Seal, press	Плыть	To swim	Поздравлять	To congratulate
ПЕЧАТАТЬ	To print	Пляж (а, и)	Beach	ПОЗИЦИЯ (и, и)	Position
Печь (и, и)	Oven, stove	Плясать	To dance	ПОКА	Until, while
Печь	To bake	ПО	On, over, at, in	Показывать	To show, exhibit
Пианист (а, ы)	Pianist	ПОБЕДА (ы, ы)	Victory	ПОКАМЕСТ	Meanwhile, until
ПІВО (а)	Beer	Побеждать	To conquer	ПОКОЙНЫЙ	Calm, comfortable, deceased, late (of a dead person)
Пила (ы, ы)	Saw (n.)	Побуждать	To urge, induce	Покидать	To quit, leave
Пирог (я, и)	Pie	Побуждение	The impulse	Покорить	To conquer, subjugate
Пирожок (жнй, жнй)	Cake	ПОВАР (а, а)	Cook (masc)	Покров (а, ы)	Cover
ПИСАТЬ	To write	Поведение (я)	Behaviour	Покровительство (а)	Protection
ПИСАНЬЕ (я, я)	The writing	Повелевать	To command	Покрывать	To cover
ПИСАТЕЛЬ (я, и)	Author, writer	Повёрнутый (ого, ые)	Agent, attorney		
ПИСЕЦ (сца, ы)	Clerk	ПОВЕРХ	Above over		
ПИСЬМО (я, а)	Letter	Поверхность (и, и)	Surface, the plane		

Покупатель (я, и)	Purchaser, customer	Пополám	By halves, in two	ПОТОМУ ЧТО	Because
покупать	To purchase	ПОПОЛНЯТЬ	To complete	ПОТОМ	Thereupon, afterwards
покупка (и, и)	Purchase	Пополудни	In the afternoon	ПОТРЕБЛЯТЬ	To consume, spend
покушаться	To attempt	Пополуночи	After midnight	Пот (а, ы)	Sweat
пóлдень (дня)	Midday, noon	Поправлять	To correct	ПОУТРУ	In the morning
пол (а, ы)	Floor	пóпрóсту	Simply	Походить	To resemble
пол (а)	Sex	попы́тка (и, и)	Attempt	Пóхороны (plural)	Funeral
пóле (я, я)	Field	пóра	Time, it is time	Поцелу́й (я, и)	A kiss
поле́зный	Useful	пóро́у	Sometime	пóчва (ы, ы)	Soil, ground
полёт (а, ы)	The flight, ^{soaring}	Порица́ть	To blame	почему́	Why
поли́ровать	To polish	пóровни	Equally	пóчём	How much
Пóлис (а, ы or á)	Policy (of insurance)	пóрознь	Separately	Пóчень (и, и)	Honour
политика (и)	Politics, policy	Пóрох (а)	The gunpowder	Пóчёт (а, ы)	Respect
поли́ция (и, и)	Police	Пóрть	To spoil	пóчта (ы)	Post, mail
Полк (á, ы)	Regiment	Пóртной (бóго, ыё)	The tailor	пóчти	Almost
пóлка (и, и)	Shell	Пóртрét (а, ы)	The portrait	пóшлина (ы, ы)	Tax, duty
пóлностью	Fully	порт (а, ы)	Port, harbour	пóезд (а, á)	Train
пóлный	Full, complete	Поруча́ть	To charge, to commission	пóэзия (и)	Poetry
половина (ы, ы)	Half	Поручение (я, я)	Commission, mandate	пóэма (ы, ы)	Poem
положе́ние (я, я)	Situation, condition	пóрча (и, и)	Damage	пóэт (а, ы)	Poet
пóлночь (и)	Midnight	пóрча (и, и)	Damage	пóтому	Therefore
полотно́ (á, а)	Linen (material)	пóрядок (дка, и)	Order, turn	пóяс (а, а)	Belt
Полуóстров (а, á)	Peninsula	Посвяща́ть	To devote, dedicate	пóвда (ы, ы)	Truth
Полушáрие (я, я)	Hemisphere	послáние (я, я)	Message	пóвило (а, а)	Rule, principle
получа́ть	To receive, obtain, get	пóсле	After, afterwards	пóвительство	Government
пóльза (ы)	Advantage, profit	послéдний	Last, latest, latter	пóвить	To govern
Пóлюс (а, ы)	Pole	пóслезáвтра	Day after tomorrow	пóво (а, á)	Right, law
пóлый	Hollow	посредй	Among	пóвосóдие (я)	Justice
пóмнить	Remember	постéль (и, и)	Bed, bedding	пóвый	Right
помогáть	Help, assist (v)	пóстепéнный	Gradual	пóздник (а, и)	Holiday
пóмощь (и)	Help, assistance, aid	пóстóлько	As much . . . as	пóздновáть	To celebrate
понимáть	To understand	пóсторóнный	Strange, stranger, outsider	пóктина (и, и)	Practice
пóны́не	Up till now	Пóстойнный	Constant, permanent	пóктический	Practical
помещáть	To place	Пóст (á, ы)	Post, position, function	пóвосхóдный	Excellent
Пóнимáть	To lower, reduce	посылáть	To send	пóд	Before, in front of
пóня́тие (я, я)	Notion, idea	пóсещáть	To visit	Предводитель (я, и)	Leader
пóперéк	Across	пóтéря (и, и)	Loss	Предлагáть	To propose, offer
		Пóтóлок (лка, ы)	Ceiling	пóдмёт (а, ы)	Subject, matter
				Предохраня́ть	To preserve, protect

Предполагать	To suppose, assume	Приказывать	To order, command	Просматривать	To examine
Предпочитать	To prefer	Прилежный	Diligent	Просмотр (а, ы)	Examination, survey
Председатель (я, и)	President, chairman	Применять	To apply, put into practice	ПРОСПЕКТ (а, ы)	The prospect
Представлять	To introduce	ПРИМЕР (а, ы)	Example	ПРОСТОЙ	Simple, mere
ПРЕДЫДУЩИЙ	Previous	ПРИМЕЧАНИЕ (я, я)	Remark, note	ПРОСТРАНСТВО (а, а)	Space
Предъявлять	To present, produce	ПРИНАДЛЕЖАТЬ	To belong to, relate to	Простыня (и, и)	Sheet
Представитель (я, и)	The representative	ПРИНИМАТЬ	To receive, accept	Простыня (ы, ы)	Request, application
Предупреждать	To prevent, to warn	ПРИНОСИТЬ	To bring	Протекция (и, и)	Protection
ПРЕДЕЛ (а, ы)	Limit, term	Принуждать	To force, compel	Протест (а, ы)	Protest
ПРЕЖНИЙ	Former	Принцип (а, ы)	Principle	Противоречить	To contradict
Президент (а, ы)	President	ПРИРОДА (ы)	Nature	ПРОТИВ	Against
Презрение	Contempt	Природный	Natural	ПРОФЕССИЯ (и, и)	Profession
Прекрасный	Beautiful	Пристыженный	Ashamed	Профессор (а, а)	Professor
ПРЕЛЕСТНЫЙ	Delightful, charming	Присутствие (я)	Presence	ПРОХЛАДНЫЙ	Cool
Прелесть (и, и)	Charm	ПРИСУТСТВОВАТЬ	To attend, be present	Проходить	To proceed, pass by
Пренебрегать	To neglect	ПРИЧИНА (ы, ы)	Cause	Процесс (а, ы)	Process, suit
Преобладать	To prevail over	Притяжение (я, я)	Attraction	ПРОЧИЙ	Other, remaining
ПРЕСТУПЛЕНИЕ (я, я)	Crime	Причинять	To cause	ПРОЧЬ	Away, be off
Прерывать	To interrupt	ПРИЕЗЖАТЬ	To arrive (not on foot)	ПРОЧНЫЙ	Steady, solid
ПРИ	By, near	ПРИХОДИТЬ	To arrive (on foot)	ПРОШЛЫЙ	Past, former
Пресса (ы)	The press	Приятный	Agreeable, pleasant	ПРОЩАТЬ	To forgive
Приближаться	To approach	Пробна (и, и)	The cork	ПРОЩЕНИЕ (я, я)	Pardon, forgiveness
ПРИБОР (а, ы)	Apparatus	ПРОБЛЕМА (ы, ы)	The problem	Прыгать	To jump
ПРИБЫВАТЬ	To arrive	Пробочник (а, и)	The corkscrew	ПРЯМО	Straight, direct
ПРИБЫЛЬ (и, и)	Gain, advantage, profit	Пробовать	To try, test	Птица (ы, ы)	Bird
Прибытие (я)	Arrival	ПРОГРЕСС (а, ы)	The progress	ПУБЛИКА (и)	Public
Привилегия (и, и)	Privilege	ПРОДАВАТЬ	To sell	Публиковать	To publish
Привлекать	To attract	Проволока (и, и)	The wire	ПУНКТ (а, ы)	Point
Привлекательный	Attractive	Продажа (и, и)	Sale	Пустой	Empty, vain
Привычка (и, и)	Habit	ПРОДОЛЖАТЬ	To continue	Пугать	To scare, frighten
ПРИВЕТСТВОВАТЬ	To welcome, greet	ПРОДУКТ (а, ы)	Product	Пустыня (и, и)	Desert
Привязывать	To attach, tie	ПРОЕКТ (а, ы)	Plan, project	ПУДРА (ы, ы)	The powder
ПРИГЛАШАТЬ	To invite	ПРОЗА (ы)	Prose	ПУТЬ (и, и)	Way, course
ПРИГОВОР (а, ы)	The sentence, judgement	ПРОИЗВОДИТЬ	To produce	ПУТЕШЕСТВИЕ (я, я)	Journey
Приглашение (я, я)	Invitation	ПРОИЗВОДСТВО (а, а)	Production	ПУТЕШЕСТВОВАТЬ	To journey, travel
Приготовлять	To prepare	ПРОИСХОДИТЬ	To occur, happen	Пухнуть	To swell
Приготовление (я, я)	Preparation	ПРОИСШЕСТВИЕ (я, я)	Event	Пушка (и, и)	Gun
ПРИЗНАВАТЬ	To acknowledge, recognize	ПРОМЫШЛЕННОСТЬ (и, и)	Industry	Пчела (ы, ы)	Bee
Призвание (я, я)	Vocation	ПРОПОРЦИЯ (и, и)	Proportion	Пшеница (ы)	Wheat
Приз (а, ы)	Prize	ПРОСИТЬ	To ask, beg	ПЫЛЬ (и)	Dust
Приложение (я, я)	Application, addition				

Пыльный	Fager, fiery
Пыльный	Dusty
Пятно (а, а)	The spot

Р, р.

РАБОТАТЬ	To work
РАБОТА (ы, ы)	Work
РАБОЧИЙ (его, ие)	Worker, artisan
РАВНЫЙ	Equal
РАД	Glad
РАДОСТЬ (и, и)	Joy
Радостный	Cheerful, joyful
Разбивать	To smash
Развертывать	To display, to unfold
РАЗВИВАТЬ	To develop
Развивать	To loosen, to undo
РАЗГОВОР (а, ы)	Conversation
РАЗДЁЛ (а, ы)	Division
РАЗДЕЛЯТЬ	To divide
РАЗНЫЙ	Different
РАЗМЁР (а, ы)	Size
РАЗНИЦА (ы, ы)	Difference
Разнообразие (я, я)	Variety, diversity
РАЗНООБРАЗНЫЙ	Various, diverse
Разочаровывать	To disappoint
Разрушать	To destroy
Разрушение (я, я)	Destruction
РАЗУЗНАВАТЬ	To inquire
РАЗУМНЫЙ	Reasonable
РАЗУМ (а)	Reason, mind
Раковина (ы, ы)	The shell
Рамка (ы, ы)	Frame
Рана (ы, ы)	Wound
Ранг (а, и)	Rank, class
РАННИЙ	Early (adj.)
РАНО	Early (adv.)
Раса (ы, ы)	Race (of men, etc)
РАСПИСКА (и, и)	The receipt
Расплата (ы, ы)	Settlement
Расплачиваться	To settle
Располагать	To dispose
Расположенный	Disposed

Распределять	To distribute
Распределение (я, я)	Distribution
РАСНАЗ (а, ы)	Story, tale
Расстояние (я, я)	Distance
РАССЧЁТ (а, ы)	Account
РАСТЕНИЕ (я, я)	Plant
РАСТИ	To grow
Растягивать	To stretch
РАСХОД (а, ы)	Expenditure, expense
Расширять	To extend
Реакция (и, и)	Reaction
РЕАЛЬНЫЙ	Real
РЕБЁНОК (нка, ята)	Child, infant
Ревнивый	Jealous
Революция (и, и)	Revolution
РЕДЕНЬКИЙ	Thin, sparse
РЕДКИЙ	Scarce, rare
РЕГУЛЯРНЫЙ	Regular
РЕЕСТР (а, ы)	The register, record
РЕЗАТЬ	To cut
РЕЗИНА (ы, ы)	Rubber
РЕЗУЛЬТАТ (а, ы)	Result
РЕНА (я, и)	River
РЕКОМЕНДОВАТЬ	To recommend
РЕДНО	Seldom
Религия (и, и)	Religion
Религиозный	Religious
РЕЛЬС (а, ы)	Rail
РЕМЕСЛО (а, ивсла)	Trade
РЕСПУБЛИКА (и, и)	Republic
РЕЧЬ (и, и)	Speech
РЕШАТЬ	To decide
РЕШЕНИЕ (я, я)	Decision
Рис (а)	Rice
РИСОВАТЬ	To draw, design
РИСУНОК (нка, и)	Drawing, design
Ритм (а, ы)	Rhythm
Рог (а, а)	Horn
Родить	To bear, beget
РОДИТЕЛИ	Parents

РОДСТВЕННИК (а, и)	Relative (n.), relation
РОЖДЕНИЕ (я, я)	Birth
День рождения	Birthday
Рождество (а)	Christmas
Роза (ы, ы)	Rose
РОСТ (а)	Growth
РОТ (рта, ы)	Mouth
Рубаха (и, и)	Shirt
Рудник (а, и)	Mine (coal, iron, etc.)
Ружье (я, я)	Gun, musket, rifle
РУНА (я, и)	Hand, arm
РУКОВОДИТЬ	To guide
Рукопись (и, и)	Manuscript
Руль (я, и)	Rudder
Ручаться	To warrant, guarantee
Ручей (ья, и)	Brook, stream
Ручна (и, и)	The handle
РЫБА (ы, ы)	Fish
РЫНОК (нка, и)	Market
Рыть	To dig, hollow out
Ряд (а, ы)	

С, с.

С (со)	With
САДИТЬ	To set, put, plant
САД (а, ы)	Garden
Сальдо	Balance
САМ (not declined)	Self
САМО	Itself
САМЫЙ	Same
Сани (plural)	Sledge, sleigh
САПОГ (а, и)	Boot
САХАР (а)	Sugar
СБОР (а, ы)	Collection
Свадьба (ы, ы)	Wedding
Свая (и, и)	The pile
СВЕДЕНИЕ (я, я)	Experience, information
СВЕЖИЙ	— Fresh
Свет (а)	The light
Светлый	Light (adj.)

Светло	Light (adv.)	СИЛЬНЫЙ	Strong	СЛУШАТЬ	To listen
Сверток (тка, и)	Roll, packet, parcel	Симпатия (и, и)	Sympathy	СЛЫШАТЬ	To hear
Свидание (я, я)	Meeting	СИНИЙ	Blue	СМЕЛЫЙ	Bold, daring
ДОСВИДАНИЯ	Good-bye, au revoir	СИСТЕМА (ы, ы)	System	СМЕРТЬ (и, и)	Death
Свидетель (я, и)	Witness	Сиять	To shine	СМЕРТНЫЙ	Mortal
Свидетельство (а, а)	Certificate	СНАЗАТЬ	To say, tell	СМЕТЬ	To dare, venture
Свинёц (ица)	Lead (n.)	Скакать	To jump, skip gallop	СМЕХ (а)	Laughter, laughter
Свиный (и, и)	Pig, sow	Скала (ы, ы)	Rock	СМЕШИВАТЬ	To mix, confuse
Свистать	To whistle	СНВОЗЬ	Through	СМЕШНОЙ	Funny, laughable
СВОБОДА (ы, ы)	Freedom, liberty	Складна (и, и)	The fold, crease	СМЕЯТЬСЯ	To laugh
Свободный	Free	Склонять	To incline, bend	Смирный	Quiet, peaceable
Связывать	To tie, to bind	Скользть	To slide, slip	Смиранный	Humble
Священник (а, и)	Priest	СКОЛЬКО	How much, how many	СМОТРЕТЬ	To look, regard
СГОВАРИВАТЬСЯ	To agree	Склон (а, ы)	The slope	Смышлённый	Clever, intelligent
Сдавать внаймы	To let, to lease	СНОРБЬ (и, и)	Sorrow	СНАБЖАТЬ	To furnish, supply
СЕВЕР (а)	The north	СНОРО	Quickly, soon	СНАРУЖИ	Outside
СЕГОДНЯ	Today	СНОРЫЙ	Quick	СНИЗУ	From below
СЕЗОН (а, ы)	Season	СНОРЕЕ	Rather (adv.)	СНИТЬСЯ	To dream
Сейчас	At once	СНОТ (а, ы)	Cattle	СНОВА	Anew, again
Секретарь (я, и)	Secretary	Скрывать	To conceal	Сновидение (я, я)	Dream (n.)
СЕКРЕТ (а, ы)	Secret (n.)	Скрытый	Latent, hidden	Снег (а, а)	Snow
СЕНУНДА (ы, ы)	Second (measure of time)	СЛАБЫЙ	Weak, slight	СОБАКА (и, и)	Dog
Секция (и, и)	The section	СЛАВА (ы)	Glory, fame	СОБИРАТЬ	To gather
СЕЛО (а, села)	Village	СЛАВНЫЙ	Famous, excellent, charming	СОБСТВЕННЫЙ	Own
СЕМЬЯ (и, и)	Family	СЛАДКИЙ	Sweet	СОБРАНИЕ (я, я)	Assembly
Семя (ени, а)	Seed	СЛЕДОВАТЬ	To follow	Совершать	To perform, accomplish
Сено (а)	Hay	СЛЕД (а, ы)	Trace	СОВЕРШЕННЫЙ	Perfect, thorough
Сень (и, и)	Shade, protection	СЛЕЗА (ы, слезы)	Tear (n.)	Совесть (и)	Conscience
СЕРДИТЫЙ	Angry	Слепой	Blind	СОВЕТ (а, ы)	Counsel, advice, council
СЕРДЦЕ (а, а)	Heart	СЛИВНИ (plural)	Cream	СОВЕТОВАТЬ	To advise
СЕРЕБРО (а)	Silver	СЛИШНОМ	Too much	СОВЕЩАНИЕ (я, я)	Conference
СЕРЕДИНА (ы, ы)	Middle	СЛОВАРЬ (я, и)	Dictionary	СОВРЕМЕННЫЙ	Modern
СЕРЫЙ	Grey	СЛОВО (а, а)	Word	СОВСЕМ	Altogether, entirely
Серьезный	Serious	Слуга (и, и)	Servant	СОГЛАСНО	According
СЕСТРА (ы, сестры)	Sister	СЛУЖБА (ы, ы)	Service, job, work	СОГЛАШАТЬСЯ	To consent
Сеть (и, и)	Net	СЛУЖИТЬ	To serve, work	СОГЛАШЕНИЕ (я, я)	Agreement
Сеять	To sow	СЛУХ (а, и)	Hearing, ear, rumour	СОДЕРЖАТЬ	To hold, maintain
СЗАДИ	Behind	СЛУЧАЙ (я, и)	Accident, occasion	Содѣйствовать	To co-operate
СИДЕНИЕ (я, я)	Seat, sitting	СЛУЧИТЬСЯ	To happen	Содрагание (я, я)	The thrill
СИДЕТЬ	To sit				
СИЛА (ы, ы)	Strength				

СОЕДИНЯТЬ	To unite	СПАТЬ	To sleep	СТАТЬ	To become, begin
СОЖАЛЁТЬ	To regret, pity	СПЕЛЫЙ	Ripe	СТАТЬЯ (я, я)	Article, clause
И СОЖАЛЕНИЮ	Unfortunately	СПЕХ (а)	Haste	СТЕБЕЛЬ (бля, и)	Stem
СОЗДАВАТЬ	To create	СПЕЦИАЛЬНЫЙ	Special	СТЕКЛО (а, стекла)	Glass (material)
Созда́ние (я, я)	Creature, creation	СПЕШИТЬ	To hasten	СТЕНА (ы, ы)	Wall
Созна́тельный	Conscious	СПИНА (ы, ы)	The back (of a man, animal)	СТЕПЕНЬ (и, и)	Degree
СОЛДАТ (а, ы)	Soldier	СПИРТ (а, ы)	Spirit (alcohol)	Старе́чь	To protect, guard
Соли́дный	Solid	СПИСОН (сна, ы)	Copy, list	Стиль (я, и)	Style
СОЛНЦЕ (а, а)	Sun	СПИЧКА (и, и)	Match (for lighting)	СТИРАТЬ	To wash (linen), to rub off
Солнечный свет	Sunshine	СПОКОЙНЫЙ	Quiet, calm	Стих (а, и)	Verse
Соло́ма (ы, ы)	Straw	СПОЛНА	Entirely	Стла́ть	To spread
СОЛЬ (и, и)	Salt	СПОРИТЬ	To argue, dispute	СТОИТЬ	To cost
СОМНЕВАТЬСЯ	To doubt	Способ (а, ы)	Means, method	СТОЛ (а, ы)	Table
СОМНЕНИЕ (я, я)	Doubt	СПОСОБНЫЙ	Capable, able	СТОЛЬНО	So many
СОН (сна, ы)	Sleep, dream	Способность (и, и)	Capacity	Столе́тие (я, я)	Century
СОННЫЙ	Sleepy	Справедливость	Justice, equity	Сторожи́ть	To watch, guard
СООБЩА	Jointly, in common	Справедли́вый (и, и)	Just, equitable	СТОРОНА (ы, ы)	Side, party
СООБЩАТЬ	To communi- cate	СПРАВНА (и, и)	Information, inquiry	СТОЯТЬ	To stand
СООРУЖЕНИЕ (я, я)	Building, construction	Спорт (а, ы)	The sport	СТРАДАТЬ	To suffer
Сопе́рничать	To compete	Споты́каться	To trip, stumble	СТРАНА (ы, ы)	Country, land
Сопрово́ждать	To accompany	Сравни́вать	To compare	СТРАНИЦА (ы, ы)	Page
Соревно́вание (я, я)	Competition, rivalry	СПЯЩИЙ	Asleep, sleeping	СТРАННЫЙ	Strange, queer
СОРТ (а, а)	Sort, kind	СРАВНЕНИЕ (я, я)	Comparison	Страсть (и, и)	Passion
Сосна́ (ы, ы)	The pine	СРАЗУ	All at once, there and then	СТРАХ (а, и)	Fear
Сосредоточи́ть	To concentrate	СРЕДА́ (ы, ы)	The middle (also Wednesday)	Страховать	To insure
СОСТОЯТЬ	To be, consist	СРЕДНИЙ	Middle, average	Страховать	To terrify
Состоя́ние (я, я)	Condition, state, wealth	СРОК (а, и)	Term, date	Страхование (я, я)	The insurance
СОСЕД (а, и)	Neighbour	СРОЧНЫЙ	Urgent	Стра́шный	Frightful, awful
СООБЕДСТВО (а, а)	Neighbourhood	Ссоро́а (ы, ы)	Quarrel	Стри́чь	To cut (hair), to shear (wool)
Сосуд (а, ы)	The vessel	Ссыла́ться	To refer to	Стро́гий	Severe
Сохну́ть	To dry	Ссылка (и, и)	Reference, deportation	Стро́ить	To build, construct
Сохраня́ть	To keep, preserve	СТАВИТЬ	To place, put	СТРОЙ (я, и)	Front, order of society
СОХРАННЫЙ	Safe (adj.)	СТА́ДО (а, а)	Herd, flock	Стро́ение (я, я)	Structure, building
Сочиня́ть	To compose, invent	СТА́ДО (а, а)	Herd, flock	Струна́ (ы, ы)	String (musical instrument)
Сочини́тель (я, и)	Author, composer	СТА́ДО (а, а)	Herd, flock	Стреля́ть	To shoot
Сочу́ствовать	To sympathise	СТАН (а, ы)	Glass, tumbler	СТУДЕНТ (а, ы)	Student
Сочу́ствие (я, я)	Sympathy	СТА́ЛЬ (и)	Steel	СТУЛ (а, ыя)	Chair
СОЮЗ (а, ы)	Union	СТА́НЦИЯ (и, и)	Station	Ступе́ньна (и, и)	Step
Спасать	To save, rescue	СТАРА́НИЕ (я, я)	Effort	Стуча́ть	To knock
Спасе́ние (я)	Safety, salvation	Стари́нный	Ancient	СТЫД (а)	Shame
СПАСИБО	Thanks, thank	СТА́РЫЙ	Old	СУД (а, ы)	Court of justice

Сударь (м, и)	Sir
Сударыня (м, и)	Madam
СУДНО (а, судя)	Ship, vessel
СУДЬБА (ы, ы)	Destiny, fate
СУДИТЬ	To judge
СУДЬЯ (я, и)	Judge
СУЖДЕНИЕ (м, и)	Judgment
СУННО (а, а)	Cloth
СУМКА (и, и)	Bag
СУММА (ы, ы)	Sum, amount
СУНДУН (а, и)	Box, trunk
СУП (а, ы)	Soup
СУХОЙ	Dry
Сушить	To dry
Существование (и, и)	Existence
Существо (а, а)	Creature, substance
СУЩЕСТВОВАТЬ	To exist
СХОЖИЙ	Similar
Сцена (ы, ы)	Scene, stage
СЧАСТЬЕ (и)	Luck, happiness, fortune
Счастливый	Happy, fortunate
СЧЁТ (а, ы or а)	Account, bill
СЧИТАТЬ	To count, calculate
СЫН (а, овья)	Son
Сырýй	Damp, raw
СЫР (а, ы)	Cheese
СЮДА	Here, hither
СЮЖЕТ (а, ы)	Subject, matter
СУПРПЗ (а, ы)	Surprise

T, T.

Табак (а, и)	Tobacco
ТАЙНЫЙ	Secret (adj.)
ТАКОЙ	Such
Та́ксa (ы, ы)	Tax, tariff
ТАК	Thus
ТА́КЖЕ	Too, also
Тамо́нна (и, и)	Custom house
ТАМ	There

Танцовать	To dance
ТАРЕЛКА (и, и)	Plate
ТВЕРДЫЙ	Hard, firm
Творить	To create
ТЕАТР (а, ы)	Theatre
Телёга (и, и) (ы, ы)	The cart
ТЕЛЕГРАММА	Telegram
ТЕЛЕГРАФ (а)	Telegraph office
Телеграфировать	To telegraph
ТЕЛЕФОН (а, ы)	Telephone
ТЕЛО (а, а)	Body, flesh
ТЕМНЫЙ	Dark, obscure
Тенденция (и, и)	Tendency
Тень (и, и)	Shade, shadow
Теория (и, и)	Theory
ТЕПЕРЬ	Now, at present
ТЕПЛЫЙ	Warm
Терать	To rub
Термин (а, ы)	Term (expression)
Терпеливый	Patient
Терпение (я)	Patience
ТЕРПЕТЬ	To suffer, endure
ТЕРРИТОРИЯ	Territory
ТЕРАТЬ (и, и)	To lose
Тесто (а)	Paste, dough
Тёсть (я, и)	Father-in-law
Тетя (и, и)	Aunt
ТЕЧЬ	To flow
ТЕЧЕНИЕ (я, и)	Current, course
Тёща (и, и)	Mother-in-law
Тигр (а, ы)	Tiger
ТИП (а, ы)	Type
Титул (а, ы)	Title
ТЯХИЙ	Gentle, calm
ТИШЬ (и)	Calm, quietness
ТОВАР (а, ы)	Merchandise, good
ТОВАРИЩ (а, и)	Comrade, partner
ТОГДА	Then
ТО-ЕСТЬ	That is to say
ТОЛПА (ы, ы)	Crowd

ТОЛСТЫЙ	Thick, stout
Толчок (чка, а)	Shock, jerk
ТОЛЬНО	Only
Тон (а, ы)	Tone
Том (а, ы or а)	Volume
ТОНКИЙ	Thin, fine
Тонна (ы, ы)	Ton
Тонуть	To sink
Топор (а, ы)	Axe
Торговать	To deal, to trade
Тормаз (а, а)	Brake
ГОРОПЫТЬ	To hurry
ТОРОПЫТЬСЯ	To hasten
ТОТЧАС	Directly, at once
ТОТ, ТА, ТО	That
ТОЧКА (и, и)	Point
ТОЧНЫЙ	Exact, punctual
ТРАВА (я, ы)	Grass
Тра́диция (и, и)	Tradition
Транспорт (а)	Transport
Трансфóрт (а, ы)	Transfer
Трaтить	To waste
Трaтта (ы, ы)	Bill, draft
ТРЕБОВАТЬ	To claim, demand
Трево́жить	To alarm, excite
Третьировать	To treat (badly)
Трещина (ы, ы)	The crack
ТРОГАТЬ	To touch
Тропа (ы, ы)	Path
Труба (ы, ы)	Pipe, tube
Трубка (и, и)	Tobacco pipe, tube
ТРУД (а, ы)	Work, labour
ТРУДНЫЙ	Difficult
Тряпка (и, и)	Rag
Трясти	To shake
Тугóй	Stiff, tight
ТУДА	Thither, there
ТУЗЕМЕЦ (ица, ы)	Native
Туман (а, ы)	Fog, mist
Тунель (и, и)	Tunnel
ТУТ	Here
ТЩАТЕЛЬНЫЙ	Careful, diligent

Тщеславие (я)	Vanity, Ambition
Тюрьма́ (ы, ы)	Prison, jail
ТЯЖЕЛЫЙ	Heavy
ТЯНУТЬ	To draw, pull

У, у.

У	At
Убивать	To kill
Убийство (а, а)	Homicide, murder
УБИТОК (тка, и)	Loss
УБЕЖДАТЬ	To convince, persuade
Убежище (а, а)	Harbour, refuge
УВЕЛИЧИВАТЬ	To enlarge, increase
УВЕДОМЛЯТЬ	To inform
УВЕРЯТЬ	To assure
Уга́дывать	To guess
Угол (гла́, ы)	Corner, angle
УГОЛЬ ((гля, и)	Coal
Угоща́ть	To entertain, treat
УГРО́ЗА (ы, ы)	Threat
УДАВА́ТЬСЯ	To succeed
Удаля́ть	To remove
Удаля́ться	To retire
УДА́Р (а, ы)	Blow, stroke
УДА́РЯТЬ	To strike, beat, hit
УДА́ЧА (и, и)	Luck, success
УДА́ЧЛИВЫЙ	Successful, lucky
УДИВЛЯ́ТЬ	To astonish
УДО́БНЫЙ	Convenient, comfortable
УДО́БСТВО (а, а)	Comfort, convenience
Удовлетворять	To satisfy
Удовлетворе́ние (я)	Satisfaction
УДОВО́ЛЬСТВИЕ (я, я)	Pleasure
Удостоверять	To certify
Удостовере́ние (я, я)	Certificate
У́жас (а, ы)	Horror, terror
Ужа́сный	Frightful, awful
УЖЕ́	Already
У́жин (а, ы)	Supper
У́зел (зла́, ы)	The knot

У́ЗКИЙ	Narrow, close
Узнава́ть	To recognize, learn
УКА́ЗЫВАТЬ	To show, indicate
Укре́плять	To fix, strengthen
Украще́ние (я, я)	Adornment
Ула́живать	To adjust, settle
У́ЛИЦА (ы, ы)	Street
Ула́живание (я, я)	Adjustment, settlement
Улучша́ть	improve
Улыба́ться	smile
УМА́ЛИШЕ́ННЫЙ	Mad, lunatic
УМИРА́ТЬ	To die
У́МНЫЙ	Clever, intelligent
УМ (а́, ы)	Mind, intelligence
Универса́льный	Universal
Университе́т (а, ы)	University
Упа́док (дка)	The decline
УПЛА́ТА (ы, ы)	Payment
Уполномо́чивать	To authorize
Упоми́нать	To mention
УПОТРЕБЛЯ́ТЬ	To use, employ
УПРАВЛ́ЕНИЕ (я, я)	Management
УПРАВЛЯ́ТЬ	To govern, manage
УПРАВЛЯ́ЮЩИЙ (во, иа)	Manager
Упрека́ть	To reproach
Упря́жна (и, и)	The team (e.g. of horses)
Урове́нь (вня, и)	Level
УРОЖА́Й (я, и)	Harvest
Уро́к (а, и)	Lesson
УСИ́ЛИЕ (я, я)	Effort
Усло́вие (я, я)	Condition
УСЛУ́ГА (и, и)	Service
УСПЕВА́ТЬ	Succeed
УСПЕ́Х (а, и)	Success
УСПЕ́ШНЫЙ	Successful
УСТА́ЛЫЙ	Tired, weary
Устра́ивать	To arrange
Усту́пать	To yield
Усыновля́ть	To adopt
Утомля́ть	To tire
УТРО́ (а, а)	Morning

У́ХО (а, у́ши)	Far
УЧЕНИ́К (а́, ы)	Pupil, disciple
УЧЕ́НИЕ (я, я)	Teaching
УЧИ́ЛИЩЕ (а, а)	School
УЧИ́ТЬ	To teach
УЧИ́ТЬСЯ	To learn
УЧИ́ТЕЛЬ (я, я)	Teacher
Учре́дить	To found
Ущер́б (а, ы)	Damage, prejudice, injury

Ф, ф.

ФА́БРИКА (и, и)	Factory
ФАБРИНОВА́ТЬ	To manufacture
ФА́НТ (а, ы)	Fact
ФЕ́РМА (ы, ы)	Farm
ФЕ́РМЕР (а, ы)	Farmer
Фигу́ра (ы, ы)	Figure
Ф́изика (и)	Physics
Ф́изический	Physical
Ф́и́нция (и, и)	Fiction
ФИНА́НСЫ (plural)	Finance
Ф́ИРМА (ы, ы)	Firm (n)
Фла́г (а, и)	Flag
Фло́т (а, ы)	Fleet, navy
Фона́рь (а́, ы)	Lantern
Фонтáн (а, ы)	Fountain
ФО́РМА (ы, ы)	Form, shape
Фортепиáно (по declension)	Pianoforte
Фотографи́ровать	To photograph
Фрахт (а, ы)	Freight
Фро́нт (а, ы)	Front
ФРУ́КТ (а, ы)	Fruit
Фу́нт (а, ы)	Pound
Фу́т (а, ы)	Foot (measure of length)

Х, х.

ХАРА́КТЕР (а, ы)	Character
ХВА́ЛИТЬ	To praise
ХИ́МИЧЕСКИЙ	Chemical
Хвост (а, ы)	Tail, rear

ХЛЕБ (а, ы and á)	Bread
ХЛОПОК (пка)	Cotton
ХОДИТЬ	To go, walk
Хлыст (á, ы)	The whip
Хозяин (а, -ява)	Host, master
ХОЛМ (á, ы)	Hill
ХОЛОДНЫЙ	Cold (adj.)
ХОЛОД (а, á)	Cold (n.)
ХОЛОСТОЙ	Bachelor
ХОРОШИЙ	Good
ХОТЕТЬ	To wish, desire, want
ХОТЯ	Although
ХРАБРЫЙ	Brave
Храм (а, ы)	Temple, church
ХРАНИТЬ	To keep
Христос (-та)	Christ
ХУДШИЙ	Worst
ХУЖЕ	Worse

Ц, ц.

ЦВЕТ (а, á)	Color
ЦВЕТОН (á, и and цветы)	Flower
Целовать	To kiss
ЦЕЛЫЙ	Entire, whole
ЦЕЛЬ (и, и)	Aim, target, purpose
ЦЕНА (ы, ы)	Price, value
Ценить	To appreciate to value
ЦЕННОСТЬ (и, и)	Value
ЦЕННЫЙ	Valuable
ЦЕНТРАЛЬНЫЙ	Central
ЦЕНТР (а, ы)	Centre
ЦЕПЬ (й, и)	Chain
Церковь (кви, кви)	Church
ЦИВИЛИЗАЦИЯ (и, и)	Civilization
ЦИФРА (ы, ы)	Figure (in numbers)
Цыпленок (нка, -лята)	Chicken

Ч, ч.

ЧАЙ (я, и)	Tea
ЧАСТНЫЙ	Private, special particular
ЧАСТО	Often
ЧАСТЬ (и, и)	Part, share
ЧАСТЫЙ	Frequent
ЧАС (а, ы)	Hour
ЧАСЫ (plural)	Clock, watch
Чаша (и, и)	Cup, bowl
ЧЕЙ	Whose
ЧЕН (а, и)	Cheque
ЧЕЛОВЕК (а, люди)	Man
ЧЕЛОВЕЧЕСТВО (а)	Humanity
Чепуха (й)	Nonsense
ЧЕРЕЗ	Across, through
ЧЁРНЫЙ	Black
Черта (ы, ы)	Feature
ЧЕСТЬ (и)	Honour
ЧЕСТНЫЙ	Honest
ЧЕТВЕРТЬ (и, и)	Quarter
ЧЕТЫРЕУГОЛЬНИК	Square
Чинить (а, и)	To repair
ЧИСЛО (á, а)	Number, date
ЧИСТЫЙ	Clean, pure
ЧИТАТЬ	To read
Чихать	To sneeze
Член (а, ы)	Member
Чорт (а)	Devil
ЧТЕНИЕ (я, я)	Reading
ЧТО	What
ЧТОБЫ	In order to
ЧТО-БЫ	Whatever
ЧТО-НИБУДЬ	Anything
Чувство (а, а)	Sense, feeling
ЧУВСТВОВАТЬ	To feel
Чудесный	Wonderful
ЧУДО (а, -деса)	Wonder, miracle
Чужеземный	Foreign
ЧУЖДЫЙ	Foreign, strange
ЧУЛОК (лка, й)	Stocking

Чурбан (а, ы)	Flock
ЧУТЛИВЫЙ	Keen (in the senses)
Чутьё (я)	Instinct, flair

Ш, ш.

ШАГ (а, й)	Step
ШАПКА (и, и)	Cap
ШАР (а, ы)	Ball, sphere
Шелк (а, á)	Silk
ШЕРСТЬ (и, и)	Wool
ШЕРШАВЫЙ	Rough
Шествие (я, я)	March, procession
ШЕЯ (и, и)	Neck
ШИНА (ы, ы)	Tire (on a wheel)
ШИРОКИЙ	Broad, wide
Шить	To sew
ШКОЛА (ы, ы)	School
Шкура (ы, ы)	Skin, hide
ШЛЯПА (ы, ы)	Hat
Шов (шва, ы)	Seam, stitch
ШУМ (а, ы)	Noise
ШУТКА (и, и)	Joke

Щ, щ.

Щедрый	Generous
Щадить	To spare
ЩЕНА (й, щени)	Chick
ЩЕТКА (и, и)	Brush

Э, э.

ЭКЗАМЕН (а, ы)	Examination
ЭКЗАМЕНОВАТЬ	To examine
ЭКСПЕРТ (ёрта, ы)	Expert
ЭКСТРЕННЫЙ	Extra
ЭЛАСТИЧНЫЙ	Elastic
ЭЛЕКТРИЧЕСТВО (а)	Electricity
ЭТОТ	This
ЭФФЕКТ (а, ы)	Effect

Ю, ю.

Юбка (и, и)	Skirt
ЮГ (а)	South
ЮЖНЫЙ	Southern
ЮМОР (а)	Humour
ЮНЫЙ	Youthful

ЮСТИЦИЯ (и) Justice

Я, я.

Яблоко (а, и)	Apple
Являться	To appear
Ягода (ы, ы)	Berry
Яд (а, ы)	Poison

ЯЗЫК (а, и) Tongue, language

ЯЙЦО (а, а) Egg

Яма (ы, ы) Hole, pit

ЯРКИЙ Bright

Ярлык (а, а) Label

ЯСНЫЙ Clear, distinct

ЯЩИК (а, и) Box, chest

LESSON 9

Russian Texts and Translations

I. Extract from Maxim Gorky's book.

ДЕТСТВО
" CHILDHOOD "

В полутёмной тесной комнате на полу под окном лежит мой отец, одетый в белое и необыкновенно длинный; пальцы его босых ног странно растопырены, пальцы его ласковых рук, скромно положенных на грудь, тоже кривые; его весёлые глаза плотно прикрыты черными кружками медных монет; его доброе лицо

темно и пугает меня нехорошо оскаленными зубами. (Is) dark and frightens me by unwell showing teeth.

Мать, полуголая в красной юбке, стоит на коленях, зачесывая длинные мягкие волосы отца (her) knees, combing away long soft hair of father from forehead to the nape with black comb,

с которой я любил перепиливать корки арбузов; мать непрерывно говорит что-то густым хриплым голосом, ее орые глаза опухли и словно

тают, .. стекал наплыв слез. are melting, trickling down by drops of tears.

Меня держит за руку бабушка, — круглая Me holds by hand grand-mother,—round

большоголовая с огромными глазами и смешным рылым big-headed with huge eyes and a funny spongy

носом; она тоже плачет, как-то особенно и nose; she also weeps, somewhat peculiarly and

хорошо подпевая матери, дрожит вся и дергает well singing with mother, trembles all and pulls

меня, толкая к отцу; я упираюсь, прячусь me, pushing towards father; I resist, hide myself

за ней; мне боязно и неловко. behind her; to me frightening and feel awkward.

Я никогда ещё не видел, чтобы большие плакали, I have never yet seen that grown-ups cried,

и не понимал слов неоднократно сказанных and did not understand words, repeatedly spoken

бабушкой: by grand-mother:

—Прощайся с тобой-то, никогда уж не Say good-bye to daddy-then, never again not

увидишь его, помер он голубчик, не в срок, will see him, died he little-pigeon not in due time,

не в свой час ... not in his hour ...

Я был тяжело болен,—только что встал на ноги; I was heavily ill,—just now stood up on legs;

во время болезни,—я это хорошо помню, — отец весело during illness,—I this well remember—father merrily

возился со мною, потом он вдруг исчез, was busy with me, afterwards he suddenly disappeared,

и его заменила бабушка, странный человек. and him replaced grand-mother, strange person.

—Ты откуда пришла? спросил я её. Thou from where came (on foot)? asked I her.

Она ответила: She answered:

из Нйниго,* да не пришла,
From above from Nijny, and not came (on foot),
а пришла! По воде-то не
but came (not on foot!) On the water-then they
хóдят, шиш!
do not walk, fig!

Это было смешно и непонятно: наверху, в
This was funny and incomprehensible: above in
дóме. жили бородатые, крашенные персияне,
the house there lived bearded painted Persians,
в в подвале старый, желтый калмык продавал
and in the basement an old, yellow Kalmuk was selling
овчины.
sheep-skins

По лестница можно съехать горхом
On the stairs is possible to come down astride
на перилах, или, когда упадёшь, скататься
on handrails or when falling down to glide down

2 ИЗВЛЕЧЕНИЕ ИЗ ТРУ. ДОВ ЛЕНИНА

« ЧТО ДЕЛАТЬ » *

Напечатано впервые в
1902г., цитируется по изданию
« Дешевой Библиотеки Госиз-
дата » Москва 1930 стр
40-41 }

Мы сказали что социал-
демократическое сознание у
рабочих не могло быть
Оно могло быть принесено
только извне История всех
стран свидетельствует, что
исключительно своими со-
бственными силами рабочий
класс в состоянии выработать
лишь сознание trade-union-
ное, т.е. убеждение в
необходимости объединиться
в союзы, вести борьбу с
хозяевами добиваться от

правительства издания тех
или иных необходимых для
рабочих законов и т.п. Учение
же социализма выросло из
тех философских историче-
ских экономических теорий
которые разрабатывались
образованными представи-

EXTRACT FROM THE WORKS OF LENIN

“What is to be done.”

(English version taken
from the generally ap-
proved translation publish-
ed by Martin Lawrence
Limited, by permission of
International Publishers
Co Inc., p 32-34)

We said that *there could
not yet be Social Demo-
cratic consciousness among
the workers* This
consciousness could only
be brought to them from
without. The history of
all countries shows that
the working class ex-
clusively by its own effort
is able to develop only
trade-union consciousness.
i.e., it may itself realise
the necessity for com-
bining in unions to fight
against the employers and
to strive to compel the
government to pass neces-
sary labour legislation etc

The theory of Socialism
however, grew out of
the philosophic historical
and economic theories

кувырком, — это я знал хорошо, — и при чем тут
topsy-turvy,—this I knew well,—but where (is) here
вода? Всё неверно и забавно спутано.
water? All wrong and funnily confused

—А отчего я шиш?*

—Оттого, что шумишь, — сказала она, тоже
Because thou makest noise,—said she, also
смеёсь.
laughingly

*NOTE. шиш, as a noun means a fig (in a mocking
or derogatory sense), and it is also the interjection—
HUSH! Hence this untranslatable play of words in
the grandmother's talk. Нйниий (adj.) means
'below' producing another untranslatable word-play
It is also the name of Nijni Novgorod

телини имущих классов,
интеллигенцией. Основатели
современного научного со-
циализма, Маркс и Энгельс,
принадлежали и сами, по
своему социальному поло-
жению, к буржуазной интел-
лигенции. Точно так же и
в России теоретическое учение
социал-демократии возникло
совершенно независимо от
стихийного роста рабочего
движения, возникло как
естественный и неизбежный
результат развития мысли у
революционно-социалистиче-
ской интеллигенции. К тому
времени, в котором у нас
идет речь, т.е. к половине 90-х

годов, это учение не только
было уже вполне сложившейся
программой Группы « Осво-
бождения Трудя », но и
завоевало на свою сторону
большинство революционной
молодежи в России

that were elaborated by
the educated represent-
atives of the propertied
classes, the intellectuals

The founders of modern
scientific Socialism. Marx
and Engels, themselves
belonged to the bourgeois
intelligentsia

Similarly, in Russia, the
theoretical doctrine of
Social-Democracy arose
quite independently of the
spontaneous growth of
the labour movement, it
arose as a natural and
inevitable outcome of the
development of ideas
among the revolutionary
Socialist intelligentsia. At
the time of which we are
speaking, i.e., the middle
of the nineties, this doc-
trine not only represented
the completely formulated
programme of the
Emancipation of Labour
Group, but had already
won the adhesion of the
majority of the revolution-
ary youth in Russia

*The learner will find this passage difficult—Lenin is not an
easy author

† The Russian in brackets is. Published first in 1902 and taken
from the edition 'Cheap Library of the 'Gosizdat' (State
Publishing Institution) Moscow, 1930, pp. 40-41

Таким образом налицо было и стихийное пробуждение рабочих масс, пробуждение сознательной жизни и сознательной борьбы, и наличие вооруженной социал-демократической теорией революционной молодежи, и ораг рвалась к рабочим. При этом особенно важно установить тот часто забываемый /и сравнительно мало известный факт/ что первые социал-демократы этого периода, усердно занимаясь экономической агитацией и вполне считаясь в этом отношении о действительно полезными указаниями тогда еще

рукописный брошюры «Об агитации» — не только не считали ее единственной своей задачей, а напротив с самого начала выдвигали и самые широкие исторические задачи русской социал-демократии вообще и задачу испровержения самодержавия в особенности. Так, например, той группой петербургских социал-демократов, которая основала «Союз борьбы за освобождение рабочего класса», был составлен еще в конце

Hence, simultaneously 1895 года первый номер газеты we had both the под названием «Рабочее spontaneous awakening of Дело». Вполне готовый и the masses of the workers печати этот номер был схва —the awakening to con- чен жандармами в набег о scious life and struggle, 8-го на 9-е декабря 1895 г. and the striving of the ре у одного из членов группы, Anat. Алено. Ванюева, revolutionary youth armed with the Social-Demo- cratic theories, to reach the workers. In this connection It is particularly important to state the oft-forgotten (and comparatively little known) fact that the early Social-Democrats of that period, zealously carried on economic agitation (being guided in this by the really useful Instructions contained in the pamphlet "Agitation" that was still in manuscript) but they did not regard this as their sole task. On the contrary right from the very beginning they brought up the general historical tasks of Russian Social-Democracy, and particularly the task of overthrowing the autocracy. For example, the St. Petersburg group of Social-Democrats, which

was formed by the "League of the Struggle for the Emancipation of the Working Class" towards the end of 1895, got out the first number of the journal known as "Rabocheye Dyelo." This number was completely ready for the press when it was seized by the gendarmes, who on the night of December 8, 1895, raided the house of one of the members of the group, Anatole Alekseyevich Vaneyev, and so the original "Rabocheye Dyelo" was not fated to see the light. The leading article in this number which perhaps in 30 years' timesome "Russkaya Starina" (Russian Antiquary) will discover in the archives of the Department of Police described the historic tasks of the working class in Russia, of which the achievement of political liberty is regarded as the most important.

* It will be noticed that the text is unaccented—deliberately so, to give an example of Russian as it is printed in a Russian book.

3. - GULLIVER IN LILLIPUT

Jonathan Swift

I.

THE WRITER GIVES SOME ACCOUNT OF HIMSELF AND FAMILY—WHAT FIRST MADE HIM GO TO SEA—HIS SHIP COMES TO DESTRUCTION—BY SWIMMING HE GETS SAFELY TO LAND IN THE COUNTRY OF LILLIPUT—IS MADE A PRISONER AND TAKEN INLAND

My father had a small property in Nottinghamshire; I was the third of five sons. He sent me to Emmanuel College in Cambridge at fourteen years old, where I was for three years, giving myself up completely to my books, but the money for keeping me, though it was very little, was overmuch for a small income, and I was put as a learner with Mr. James Bates, a noted medical man in London. I was with him for four years, my father from time to time sending me small amounts

ГУЛЛИВЕР В ЛИЛЛИПУТИИ.

Ионафана Свифта.

I.

Писатель даёт некоторые сведения о себе и своей семье—Что прежде всего заставило его пойти в море—Его судно терпит крушение—Он достигает вплавь земли в стране лиллипутов—Его берут в плен и увозят внутрь страны

Мой отец имел небольшое имущество в Ноттингхемшире; я был третьим из пяти сыновей. Он послал меня в Колледж Эммануэля в Нимбридже, когда мне было четырнадцать лет, где я прбыл три года, отдаваясь всецело своим книгам; но денег на мое содержание, хотя это было очень мало, было слишком большой таянестью для маленького дохода, и я был помещен в качестве ученика к Г-ну Джимсу Бэйтоу, известному врачу в Лондоне. Я прбыл у него четыре года, причем мой отец посылал мне от времени до времени небольшие суммы

of money which I made use of for learning the science of the control of ships, and other parts of mathematics of value to those whose purpose it is to go on journeys. It was ever my belief that some day or other it would be my good chance to do this. When my time with Mr. Bates was ended, I went back to my father. There, with his help and that of his brother and some other relations, I got £40, with the hope of £30 a year in the future to keep me at Leyden. I did medical science in that town for two years and seven months, certain that it would be of use to me on long sea journeys. A short time after coming back from Leyden, with the help of my good teacher, Mr. Bates, I became medical man to the *Swallow*, of which Captain Abraham Pannell was the chief. I was with him for three years and a half, making a journey or two into the Levant and some other parts. When I came back, I made the decision to come to London, and in this I was supported by Mr. Bates, my teacher who said a good word for me to a number of persons under his care. I took part of a small house in the Old Jewry; and the suggestion being made that it would be better for me to make a change in my condition, I got married to Miss Mary Burton, second daughter of Mr. Edmund Burton, stocking trader in Newgate Street, with whom I was given 400 pounds.

But my good teacher Bates came to his end two years later, and I had only a small number of friends, so my business went from bad to worse; because, being an upright man, I was unable to make use of those tricks which are common among a great number of medical men. I got Mary's opinion and that of some of my friends, and made a decision to go to sea again. I was medical man in two ships, one after the other, and made a number of journeys, for six years, to the East and West Indies, by which I got some addition to the money I had. I made use of my free time in reading the best writers past and present, having at all times a great number of books with me; and when I was on land, I gave much time to getting a knowledge of the behaviour and qualities of the men and women of the country, and learning their language, which I was able to do very well, by reason of the power of my memory.

The last of these journeys was not a very happy one, and I got tired of the sea, and now had a desire to go back to my family. I went from the Old Jewry to Fetter Lane, and from there to Wapping, hoping to get business among the sailors, but I was unable to make any money. After hoping for three years that things would get better, I took a good offer from Captain William Pritchard, chief of the *Antelope*, who was going to the South Sea. We made a start from Bristol, May 4th, 1699, and our journey at first went very well.

денег, которые я употреблял для изучения науки управления судами и других частей математики, цинных для тех, кто имеет намерение путешествовать. Я всегда верил, что мне когда-нибудь посчастливится сделать это. Когда моё время у г-на Бэйтса закончилось /истекло²/, я вернулся к моему отцу. Там, с помощью его и его брата и некоторых других родственников я получал /достал/ сборы фунтов, в надежде на дальнейшие тридцать фунтов в год в будущем на мой содержание в Лейдене. Я изучал медицинскую науку в этом городе течение двух лет и семи месяцев, будучи уверен, что она будет мне полезна в долгих морских путешествиях. Через короткое время после возвращения из Лейдена, с помощью моего доброго учителя г-на Бэйтса, я сделался врачом на ЛАСТОЧКЕ, командиром которой был Капитан Авраам Пэннелл. Я пробыл с ним три с половиной года, совершив одно или два путешествия в Левант и некоторые другие места. Когда я вернулся назад, я решил /принял решение/ поехать в Лондон, и в этом меня поддержал мой учитель г-н Бэйтс, который замолвил /сказал/ за меня доброе слово ряду лиц, которых он лечил. Я снял /взял/ часть маленького дома на Олд Джурри, и так как мне был дан совет, что было-бы лучше для меня сделать изменение в моём положении, то я женился на Мисс Мэри Бэртон, второй дочери г-на Эдмунда Бэртона, биржевого торговца на улице Ньюбэйт, за которую мне дали четыреста фунтов приданого.

Но мой добрый учитель Бэйтс скончался двумя годами позднее, а я имел только небольшое число друзей, так что мой дела пошли все хуже и хуже, потому что, будучи честным человеком, я не мог пользоваться такими обманами, какие обычны среди большого числа врачей. Я посоветовался с Мэри и с некоторыми из моих друзей и принял решение опять уйти в море. Я был врачом на двух судах, одно за другим, и совершил /сделал/ ряд путешествий течение шести лет в Восточную и Западную Индию, чем сделал некоторое добавление к деньгам, которые я имел. Я пользовался моим свободным временем для чтения лучших писателей прошлого и настоящего, имея с собою всё время большое число книг: а когда я был на суше, я отдавал много времени ознакомлению с поведением и качествами мужчин и женщин стран и изучению их языка, что я мог /был в состоянии/ делать очень хорошо благодаря силе моей памяти.

Последнее из этих путешествий было не очень счастливым, и я устал от моря /и море мне надоело/, и теперь у меня было желание вернуться к моей семье. Я переехал с Олд Джурри на Феттер Лэйн, а оттуда в Уэппинг, надеясь получить практику среди моряков, но я не мог /не был в состоянии/ заработать ничего бы то ни было денег. Проведя три года в надеждах, что дела поправятся /будут лучше/, я принял хорошее предложение от Капитана Уильяма Причарда, командира АНТИЛОПЫ, который отправлялся /уходил/ к Южному Моря. Мы выехали из Бристля четвертого мая тысяча шестисот девяносто девятого года, и наше путешествие сначала шло очень хорошо.

² Alternative words or expressions in straight brackets / are of equally common, "everyday" usage.

There would be no point in troubling the reader with a full account of all the details of our experiences in those seas. Let it be enough to say that on our journey from there to the West Indies, we were taken by a violent wind to the north-west of Van Diemen's Land. By an observation, we saw that we were 30 degrees 2 minutes south. Twelve of our men were dead through overwork and bad food; the rest were in a feeble condition. On the 5th of November, which was the start of summer in those parts, the weather being not at all clear, the seamen saw a great stone mass very near to the ship, and the wind was so strong that we were sent straight upon it, and were quickly broken in two. Six of the men, of whom I was one, let down the boat into the sea so as to get ourselves clear of the ship and the stone. We went, by my measuring, about nine miles, till we were unable to do any more work, having been made very feeble by the hard conditions on the ship. So we gave ourselves up to the motion of the waves, and in about half an hour the boat was overturned by a sudden wind from the north. That is the last I ever saw of the others in the boat or of those who got away on to the stone or were still in the ship, but I have no doubt they all went to their death.

I kept swimming in any direction, and was pushed forward by wind and current. I frequently let my legs down but without touching earth; but when I was almost at the end of my powers and unable any longer to put up a fight, I saw that I was in not very deep water, and by this time the wind had gone down. The slope was so small that I went almost a mile on foot before I got to the land, which I did at about eight at night. I then went forward for almost half a mile, but there were no signs of houses or of anyone living there; at least, I was in such a feeble condition that I did not see them. I was very tired, and with that, and the heat of the weather, and about half a pint of cognac which I took when I came away from the ship, I had a great tendency to go to sleep. I got down on the grass, which was very short and soft, and I had the deepest sleep I have ever been in. It seemed to me I was sleeping for about nine hours; because when I came awake it was daylight. I made an attempt to get up, but was unable to make a move; because, as I saw while stretched on my back, my arms and legs were strongly fixed on the two sides to the earth, and my hair, which was long and thick, was kept down in the same way. In addition, there were a number of thin cords across my body, from under my arms to the upper part of my legs. I was able to see only up; the sun was getting very warm and my eyes were troubled by the light. Strange noises round me came to my ears but in the position in which I was, I was able to see nothing but the sky. In a little time I was

Было-бы интересно доучать читателя полным отчётом /рассказом/ о всех деталях /подробностях/ наших приключений на тех морях. Достаточно сказать, что на нашем пути оттуда в Западную Индию мы были захвачены местным ветром к северо-западу от Ван Дименской Земли. Наблюдением мы установили, что мы были на тридцати градусах двух минутах южной широты. Двенадцать из наших людей умерли вследствие чрезмерной работы и плохой пищи; остальные были в слабом состоянии. Пятого ноября, что было началом лета в тех местах, когда погода была совершенно не ясной, моряки увидели большую каменную массу очень близко к кораблю, и ветер был так силен, что нас погнал прямо на неё, и мы быстро переломились надров. Шесть человек, среди которых был я, спустили лодку в море, так чтобы отойти подальше от корабля и камня /скалы/. Мы прошли, по измерению, около девяти миль, пока оказались /были/ не в состоянии более работать, будучи очень ослаблены вследствие тяжёлых условий на корабле. Таким образом мы отделились движением волн, и приблизительно через полчаса лодка была перевернута внезапным ветром с севера. Это было в последний раз, что я видел других людей в лодке, или тех, которые перебрались на скалу или были ещё на корабле. но я не сомневаюсь что они все погибли.

Что касается меня, то я продолжал плыть в разных случайных направлениях, и ветер и течение толкали меня вперёд. Я часто опускал ноги, но не мог коснуться дна /земли/. Когда-же я был почти у конца моих сил и не в состоянии более бороться, я заметил /увидел/, что я был в не очень глубокой воде, и в это время ветер упал. Силой был так мал, что я прошёл почти милю пешком, прежде чем добрался /дошёл/ до суши /земли/, что я сделал около восьми часов вечера. Затем я прошёл вперёд почти пол мили, но там не было следов домов или кого-либо живущего там, по крайней мере я был в таком слабом состоянии, что я их не видел. Я был очень утомлён, и благодаря этому и жаркой погоде и почти пол пинты коньяку, который я взял с собою, когда сошёл с корабля, у меня была большая склонность заснуть. Я лёг на траву, которая была очень коротка и мягка /короткая и мягкая/, и впал в самый глубокий сон, какому я когда либо имел. Мне казалось, что я спал около девяти часов: потому что когда я проснулся, был дневной свет. Я сделал попытку встать /подняться/, но был не в состоянии сделать движение: потому что, как я увидел, лёжа /вскакинувшись/ на спину, мой руки и ноги были прочно прикреплены с обеих сторон к земле; и мой волосы, которые были длинными и густыми, были притянуты вниз таким-же образом. В дополнение, было больше число тонких верёвок поперек моего тела, из под моих рук верхней части моих ног. Я мог /был в состоянии/ смотреть только вверх; солнце становилось очень горячим, и мой глаз беспокоил свет. Станные звуки вокруг меня дошли /доходили/ до моих ушей; но в положении, в котором я находился /был/, я не мог видеть ничего кроме неба. Через короткое время я

conscious of some living thing moving on my left leg, and coming softly forward over my chest almost to my chin. Turning my eyes down as much as possible, I saw that it was a being in the form of a man not six inches high, with an archer's instrument in his hands and a long narrow box on his back. At the same time I was conscious of at least 40 more of the same sort (as it seemed to me) coming after the first. I was greatly surprised, and gave such a loud cry that they all went running back in fear, and some of them, as they said to me later, were damaged by the falls they had in jumping from my sides to the earth. However they came back very quickly, and one of them, who came so far as to get a full view of my face, lifting up his hands and eyes in the warmest approval, gave a cry of *Hekinah degul!* in a high but clear voice. The others said the same words again and again, but I had no idea then what the sense of them was.

All this time, as will not be outside the reader's belief, I was greatly troubled. At last, fighting to get loose, I happily got the cords broken and the pins pulled out by which my left arm was fixed to the earth. Then, by lifting it up to my face, I saw the way they had made me a prisoner.

почувствовал, что каная-то живая вещь действовалась по моему левый ног и подходила тихо вперёд на мой груд и почти и моему подбородку. Повернув глаза вниз насколько было возможно, я увидел что это было существо в виде человека нинге шестой дюймов с орудием лучника в его руках и длинным узким ящиком на его спине. В то-же самое время я чувствовал, что по крайней мере ещё сорот того же рода (как мне казалось) шли за первым. Я был сильно /очень/ удивлен и издал такой громкий крик, что они все убежали назад в страхе, а некоторые из них, как они сказали мне позднее были ушиблены от падения, прыгая с моих боков на землю. Однако они вернулись /пришли/ назад очень скоро, и один из них, который подошёл так близко, чтобы видеть все мое лицо, поднимавши свой руж и глаза в горячем восхищении, издал крик /воскликнул/ ХЕКИНА ДЕГУЛ таким на ясным голосом. Другие сказали /произнесли/ те-же самые слова опять и опять, но я не имел тогда представления о том, канов был их смысл.

Все это время, ман читатель легко поверит, я был очень озабочен. Наконец, борясь, чтобы освободиться, я к счастью порвал веревки и вырвал копы, которыми мой левый рука была прикреплена к земле. Затем подняв её к моему лицу, я понял, каким способом они сделали меня пленником взяли меня в плен/

Alphabets

TT RUSSIAN HANDWRITING.

The written Alphabet

Аа ЪѢ Вѣ Тѣ Дѣгъ Еѣ Жж
Ззз Уу Ѧѧ Іі Кк Лл Мм
Нн Оо Пп Рр Сс Тт Уу
Фф Хх Цц Чч Шш Щщ ѿ

u. v. W₁₆ D₃ W₁₀ J₂ O₆
V_r "Never used at the beginning of a word."

Баба, Вот, Губа, Жена, Малистой,
Приздр, Хороший, Щека, Сын.
Поварнич, работает.

† RUSSIAN ITALIC ALPHABET.

1 Аа, 2 Бб, 3 Вв, 4 Гг, 5 Дд,
6 Ее (Её), 7 Жж, 8 Зз, 9 Ии,
10 Йй, 11 Іі, 12 Кк, 13 Лл, 14 Мм,
15 Нн, 16 Оо, 17 Пп, 18 Рр 19 Сс,
20 Тт, 21 Уу, 22 Фф, 23 Хх, 24 Цц,
25 Чч, 26 Шш, 27 Щщ, 28 Ъъ, 29 Ыы
30 Ьь, 31 Ъъ, 32 Ээ, 33 Юю, 34 Яя,
35 Өө, 36 Үү.

Compare the above alphabet with the handwriting on this page

† RUSSIAN ORDINARY ALPHABET.

1 Аа, 2 Бб, 3 Вв, 4 Гг, 5 Дд
6 Ее, 7 Жж, 8 Зз, 9 Ии, 10 Йй
11 Іі, 12 Кк, 13 Лл, 14 Мм, 15 Нн
16 Оо, 17 Пп, 18 Рр, 19 Сс, 20 Тт
21 Уу, 22 Фф, 23 Хх, 24 Цц, 25 Чч
26 Шш, 27 Щщ, 28 Ъъ, 29 Ыы
30 Ьь, 31 Ъъ, 32 Ээ, 33 Юю, 34 Яя
35 Өө, 36 Уу.

HINTS FOR FURTHER STUDY

The student's next step in Russian studies should be to settle down to a course of reading, and in this he has a very wide choice. First he must provide himself with a good Russian-English dictionary such as that of Boyanus and Muller. He is hardly likely to need more grammar than this Course has provided. But, if it is wished to pursue the study, it is difficult to improve upon Nevill Forbes's Russian Grammar, or, perhaps still better, his First, Second, Third and Fourth Russian Books (published by the Clarendon Press). His Second Russian Book contains the best statement in English of the Russian verb—and it is the verb which presents the greatest difficulty of the language. The *Basics and Essentials of Russian* by Charles Duff is useful for the pocket, and the *New Russian Grammar* by Anna H. Semeonov is also an admirable book which can be thoroughly recommended.

Reading. Now for reading. Any elementary reader will do for a month or so, until the student has found his feet—that of Anna H. Semeonov (published by Dent) can be recommended. Occasionally still to be found in the secondhand bookshops are Bondar's *Russian Readers*, an excellent series of text books, annotated and accented, and in the old spelling. Messrs. Dent have published an edition of Pushkin's *Captain's Daughter*, with an introduction, an abundance of explanatory notes, and a vocabulary by Anna H. Semeonov. There could be no better book for the student who has had a little practice in reading short extracts—in Pushkin's tale, in spite of colourful and colloquial language, the Russian is not difficult. The experience of working right through a prose masterpiece—although not a long one—tends to create confidence. Here is literature in the full, and not in mere extracts. After a month or so of reading annotated texts, proceed to the series of Oxford Russian Plain Texts edited by Nevill Forbes. These include works by Tolstoy, Turgenev, Pushkin, Gogol, Dostoevsky, Saltykov, Korolenko, Goncharov, Krilov, Lermontov—enough to

keep you occupied for some time, and providing an admirable introduction to the vast ocean of Russian Literature. Read at least three of them.

By the time all this has been worked through, the plunge into Russian literature can be taken. The following books will provide a guide:

- A History of Russian Literature* (to 1881) by D. S. Mirsky.
- Contemporary Russian Literature* (1881-1925) by D. S. Mirsky.
- Soviet Russian Literature* (to 1943) by Gleb Struve.
- The Russian Novelists* by Janko Lavrin.
- Books on Soviet Russia* (1917-1942) by Philip Grierson.

In these books the reader will be presented with a prospect as vast as the mind of man. Russian literature is so immense that the most anyone can ever hope to do is to read a part of it. Everyone must make his own selection and be guided by his own tastes.

Russian Classics. Sooner or later Tolstoy's *War and Peace*, or *Anna Karenina*, should be read. The best translation is that by Louise and Aylmer Maude (World's Classics). And then may be read the more difficult *Brothers Karamazov* by Dostoevsky (translation in Everyman Library), and Gogol's *Dead Souls*. Among the contemporary writers to be read is Sholokhov's *Quiet Flows the Don*, a great book in the Tolstoy tradition. The problem will always be to select from a superabundance of riches: no modern literature contains so much as Russian.

With these pointers the student can pursue his own way, in the full assurance that a study of the Russian language will reap the richest of rewards and be worth all the effort that can be put into it. In the novel alone, the Russians have reached the highest peaks of literature, but in addition there is their poetry, their drama and, not least, their works on sociology and science. In the world in which we live all these are of high importance.

PHILOLOGY

THE science of philology, an outline of which is given in this Course, is the study of human speech and vocabulary. Men have always speculated as to the reasons for the names of things and the ultimate meaning of words, but it is only during the last century and a half that a real science of language has developed and methods have been evolved for the study of words, their origin, and meaning. These Lessons explain what speech consists of, how and why modern speech differs from that of earlier times, the relations between sound and meaning, the influence of one language upon another, the origin and meaning of personal and place names, and many kindred subjects.

The reader should also consult the Courses on the ENGLISH LANGUAGE (Vol. 1) and PHONETICS (this vol.). Other Courses dealing with language study are those on FRENCH and LATIN (Vol. 2), GERMAN and GREEK (Vol. 3), ITALIAN and SPANISH (Vol. 4), and PORTUGUESE and RUSSIAN (this vol.)

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LESSON 1

The Primary Art of Human Speech

ALMOST all animals communicate by means of sounds. Man has gone farther than any other animal in specialising and developing certain organs of the body for the production of sounds, in increasing the variety of such sounds, and in controlling and grouping them for the purpose of communicating with his fellows. The beginning of speech coincides with the first development of man as an independent group among the other animals ; the process of evolution in language has continued ever since -for many thousands of years. Man himself has not remained unchanged during this long period, but his faculties, his ideas, his physical characteristics, and his activities have developed in countless directions. It is not surprising that a social faculty so intimate and vital as speech should have changed also in a remarkable degree, even within comparatively short periods.

Evolution of Language

If 20th-century men could step back to the time of Shakespeare, they would certainly understand what people were saying, though the pronunciation of certain words would appear strange. Two hundred years earlier, in the time of Chaucer, they might perhaps be able to recognize enough words and phrases to follow what was being said. A further journey into the past, this time of five hundred years, to 900, the year of King Alfred's death, and most people would find it impossible to carry on a conversation, although modern English is a direct descendant of 9th-century English. The same is true of any modern language. The form which it possessed a thousand years ago is extraordinarily different from that of to-day.

It is the business of these Lessons to explain these differences, and, as far as possible, the factors which influenced the changes ; to illustrate such changes by a consideration of similar factors at work to-day ; to find out how speech is acquired in infancy ; to discuss the different units of which language is composed, the influence of one language upon another, the question of the origin and meaning of names, the relation between sound and meaning, the changes in meaning which words often show in the course of centuries, and other kindred subjects. These matters are the substance of Philology.

Reference has been made so far to *spoken* rather than to *written* language, and it is important to emphasise the fact that, as spoken language is the earlier, so it is also by far the more important of the two. Writing is merely

a symbol of speech, a kind of second-hand method of expression ; and as such, it is always some distance behind speech in the process of evolution. Man must have been a speaking animal for very many centuries before he became a writing animal. To consider speech as a debased or corrupt form of written language is an entirely wrong and unnatural view of things. Generally speaking, if a language is not spoken it dies. Developments take place in the spoken language first ; then they are expressed in the written language. Changes in the use of graphic symbols are considered and deliberate. Changes in speech are free, unconscious, natural developments.

There is plenty of living material for studying a language of to-day : one's own speech and that of associates, the voices heard on radio and television, and the products of such mechanical devices for the reproduction of speech as the gramophone and tape-recorder. But when the student looks backwards beyond the extent of his own memory, beyond the days when the gramophone was invented, he has no direct means of ascertaining the sounds and other characteristics of language as spoken at any period. He can learn about them only indirectly, chiefly from written symbols, which are at best only a somewhat obscure reflection of the real thing. It is this fact that makes the study of the history of any language difficult. However, in considering the general characteristics which are common to languages at all periods, illustrations can be chosen from the living languages of the present day, and from personal observation.

Science of Philology

It is only natural that people should take an interest in a faculty common to all men ; even as far back as the classical periods of Greece and Rome writers were speculating about the reasons why certain things should be called this or that, and making guesses (usually wrong) about the ultimate meaning of individual words. But it is only during the last two centuries that a real " science " of language has developed and that ill-formed " guessing " on the subject has given way to methodical study ; and most of the recognized methods and axioms of the modern investigation of language have evolved within the past century.

The problem of the origin of speech is one which has engaged the attention of scholars and others for many years, but it cannot be said that a full solution of it has yet been found. Various theories have been advanced from

time to time to account for man's development of the sounds produced by the larynx into a means of communicating with his fellows. Perhaps none of these is really capable of proof, nor is it probable that one single theory will account for the whole story. The tendency at present is to feel that a combination of factors produced speech as it is known to-day.

Theories of Speech Origin

A few of the older theories may be mentioned briefly. One, known as the *bow-wow* theory, was based on the belief that all primitive words were of imitative origin: that man imitated the sounds produced by birds or beasts or physical actions, and that such sounds became generally used as names for these creatures or actions, further developments in meaning being metaphorical.

The *pooh-pooh* theory regarded the beginnings of language as being largely exclamatory or interjectional—single vowels or consonant sounds (e.g. a hum or hiss) uttered as a natural reaction to stimulus, such as the groan of pain or the quick, indrawn breath of surprise or shock. This theory lays too much stress on language as a means of expression and too little on it as a means of communication.

The evolvers of the *yo-he-ho* theory turned to the purely physical results of vigorous muscular action: the rhythmical expulsion of the breath which often accompanies violent effort, and the consequent effect on the muscles of the throat, chest, and mouth. Concerted action with similar physical effects might then lead to the adoption by a community of a particular sound or group of sounds produced by an action as a symbol for it.

Primitive Language

More recently the *ta-ta* theory has suggested that the movements of the tongue, lips, etc., in producing speech-sounds are evolved as imitations of manual gestures. But there is little reason for supposing that intelligible manual gesture preceded speech; indeed, while man, in his most primitive state, was largely a tree-dweller, he would have other uses for his hands than signalling with them.

The chief difficulty in approaching the problem of the origin of speech is that there is almost no means of knowing what primitive language was really like. None of the languages in existence to-day, even of the most remote and savage tribes, can be regarded as primitive in the sense of having recently evolved. All must have a long line of development behind them. It is possible that the nearest approach to the dawn of language is in the first crying and babbling of the very small baby before he begins to imitate those around him and becomes dependent on the long tradition of his native tongue.

All animals and birds, and many insects, are able to produce some kind of noise which they use for signalling, for mating calls, and so on. Man is the only creature that has evolved a valvular larynx; and stress has recently been laid on the fact that the arboreal habits of man's ancestors, with the constant use of the forelimbs or arms in swinging, climbing, and holding, would naturally tend to the development of the thorax and throat, leading in its turn to the enlargement, strengthening, and elaboration of the larynx. The extra resonance and carrying power of the sounds which could be produced by this improved larynx must have been of great convenience and value, and those families or communities which used the new faculty best in communicating alarm or other signals might have the most chance of surviving. When man descended from the trees and stood upright, the consequent development of the chest must have further helped and freed the voice.

Primitive Man's Noises

But in addition to the use of the voice for alarm-cries and other types of communication, it is probable that primitive man used his voice, exercised it, and experimented with it for sheer pleasure in the varied noises it made, as an infant does. He must have used it in the cry of joy, the roar of rage, the howl of victory, the croon of love; and it is probable that certain sounds or series of sounds became associated first with a single individual and his actions, and were adopted by a whole community as a noise to be made on seeing this individual or in performing a similar action, being reproduced in this way whenever prompted by a particular stimulus.

There are many ways in which chance association between sounds and objects might arise, and the system would be extended gradually and unconsciously to cover the whole range of primitive experience. System is perhaps hardly the word, as the process was probably unsystematic and arbitrary.

The farther back investigation is made into the history of any language, the more multifarious and lacking in economy its modes of expression are found to be. The number of sounds used is greater, words are longer, the use of pitch accent (expressing differences of meaning by changes of tone) is more frequent, the greater number of words for individual actions and objects, and the absence of abstract and general terms, are very marked. The same is true of the languages of uncivilized races of to-day. As language evolves through the ages it seems to be tending towards greater simplicity and economy.

A fairly large number of words owe their origin to the imitative instinct in man. The sound resulting from a physical action, or the

cry of a bird or beast, is reproduced as nearly as possible, often very inadequately, by the human voice, and the speech-sound or group of sounds used for this purpose becomes the name of the action, of the bird, and so on.

One of the simplest types of imitative word is that used by children, or perhaps even more often by adults in speaking to children, for the sound of a bird or beast, and then occasionally for the beast or bird itself. Hence we have *bow-wow*, *quack-quack*, *cock-a-doodle-doo*. The imitative names of the cat's sounds have not been adopted for the animal itself, either in the case of *purr*, or of *mew*, *miaoow*, etc. The sheep's *baa* is, however, incorporated in the childish *baa-lamb*, and the cow's *moo* in *moo-cow*, but neither of these is used (as a rule) as an independent name for the animal. The words *neigh* and *whinny* are both imitative, and so also is *whine* (O.F. *hwīnan*; cf. Old Norse *hvina*, Danish *hvīne*).

Bird-sounds

Bird-names which are imitative of their cry include *chiff-chaff*, *whimbrel*, the Scottish *whaup*, the American *whip-poor-will*, and, of course, *cuckoo*. The last, being a very distinctive sound, appears in much the same form in languages other than English; for instance, in French *coucou*, in Latin *cuculus*, in Greek *kokkux*. Another bird-name which reappears recognizably in other languages is *hoopoe* (earlier *hoopoop*); cf. the Low German *huppupp*, the Old French *pupu*, the Lat. *upupa*, and the Greek *epops*. The whooping-swan is also named from its cry, the word *whoop* (cf. *whooping-cough*) being itself imitative.

Other bird-sounds are *caw* (of crows), *hiss* (of geese), *cackle* (of hens), *honk* (of wild geese), and, more generally, *cheep*, *chirp*, *chirrup*, and *twitter*. Some of these have been transferred to human or mechanical sounds. The owl cries (according to the English language) *tuwhitt-tuwhoo*, and the name *owl* itself, and also the related word *howl*, are imitative of the bird's cry; the Old English form of the word was *ule*, which is obviously like the Old High German name *ūwila* (cf. Mod. German *heulen*, to howl). All these correspond to the imitative Latin *ulula*, owl, and the verb *ululāre*, to howl (cf. Mod. Eng. *ululant*, Greek *hulāein*, to howl, to bark).

Metallic Sounds

Other imitative sounds form the metallic group, *click*, *clack*, *clink*, and *clank*, and the more resonant *clang*. The last is probably independent of the Lat. *clangere*, in the same sense and also of imitative origin. Similar words are to be found in other Germanic dialects. Old High German had the noun *klank*, and Modern German has the verb *klingeln*, to tinkle; Frisian and Dutch both have a verb *klinken*. Again,

there is the group *ting*, *tingle*, *tinkle*; from an obsolete verb *tink* comes the noun *tinker*, named from his trade of mending metallic objects. The *tick* of a clock is also imitative, as is the *ding-dong* supposed to represent the sound of a bell.

Another type of sound—that made by humming with closed lips—is found in the *m*-group. The word *hum* represents this effect, and from this the name *humble-bee* is derived. *Mum* typifies the result of keeping the lips closed. The verb *mumble* (in both senses) has relations in the Dutch *mommelen*, to mutter, and the Low German *mummeln*, to mumble food. *Mutter* and *murmur* also belong to this group, the latter coming from the Latin noun *murmur* (and verb *murmurare*), paralleled by the Greek *mormurein*, to roar (of water), and Sanskrit *marmara*, rustle (of wind); these three are reduplicated forms.

Whimper (cognate with German *wimmern*) resembles *whisper* (O.F. *hwisprian*), which may be compared with Middle Dutch *wisperen*, O.H.G. *wispalon*, and, with a different medial consonant, Old Norse *hvista*, and Old Slavonic *svistati*. *Whistle* and *rustle* imitate a somewhat similar sound, and more exact imitations occur in the Latin (reduplicated) *susurrāre*, to buzz, and the noun *susurrus*, whisper (which are related to Old Slavonic *svirati*, to pipe, Sanskrit *svarati*, it sounds), and Lat. *sibilus*, hissing (cf. Eng. *susurrant*, *sibilant*, both from Latin).

The *sh*-sound used for quieting has given rise to the verb *hush*; other words imitating a rush of air include *snuff*, *whiff*, *whiffle*, and also *buzz*, *fizz* (and *fizzle*), *whizz*, *whirr* (cf. Danish *hvirre*, to whirl), and *puff* (O.F. *pyffan*; cf. Swed. *puffa*).

Imitative of Children's Voices

Sounds made by infants have settled down to regular words in *papa* and *mamma*. The word *babble* is also imitative of children's voices, and similar words occur in Swedish (*babbla*) and Latin (*babulus*). The English *lull* is probably borrowed from Swedish (*lulla*), and from it comes the noun *lullaby*. These resemble the German *lallen*, to stammer, babble (used also as a technical name for the first "sound-exercises" of children), Greek *laleō*, I chatter, babble, Lat. *lallāre*, to sing to sleep, and Sanskrit *lalalla*, stammering.

The words representing "throat-sounds"—*chuckle*, *gargle*, *gurgle*, *giggle*—are partly imitative, and so are the words *gabble* and *gobble*, indicating lip and tongue movements. *Gag* (verb and noun) is probably imitative of the sound made in choking. Other sounds produced by the human voice are represented by *shoo*, *halloo*, *hurrah*, etc.

There are the orthographical symbols representing (very inadequately) some of the exclamations consisting of a single (or reduplicated) speech-sound, e.g. *pooh*, *pshaw*, *ahem*, *tut-tut*.

LESSON 2

Various Aspects of the Study of Words

THERE are several different sides to the study of language, from the actual sounds produced and heard and the mechanism of the production, to the psychology of the speaker and of the hearer. Philology tends to overlap other branches of study—history, for instance, and ethnology, literature, archaeology, and general psychology. But this course is limited, as far as possible, to such aspects of the study as can be included under the heads of phonology, vocabulary, accidence, and syntax.

Phonology

Phonology includes, in the first place, phonetics: the study of the individual sounds produced by activities of the organs of speech (tongue, teeth, lips, larynx, etc.), and the differences in sound caused by different positions and movements of these organs. Phonology also includes the grouping of separate simple sounds to form words; it traces the gradual changes in the sounds composing individual words during the life history of a language, and studies the series of sounds used by a single language at a single period of its existence. It shows, for instance, how an Old English word such as *hāmas* (two syllables, the first vowel like that of present day *father*) developed into the form *homes*, and how a place-name such as the ninth-century *Wulfheardesworthig* (Wulfheard's farm) could become the modern *Woolseri* (written *Wolfdisworthy*). It traces the changes in or loss of prefixes, suffixes, and inflexional endings; it investigates the effects of varying stress and intonation. The study of phonology deals, in fact, with everything connected with the actual sounds of speech.

Vocabulary

Vocabulary embraces the study of individual words, not from the point of view of the sounds of which they are composed but from that of the meanings which they are used to express, and the way in which they are combined with others. It deals with changing fashions in words, with the manner in which a word once popular may become rare and then disappear completely or perhaps come once more into widespread use. It studies also the changes in meaning which words undergo, the adaptation of old words to express new ideas—for instance, the Old English word *cniht*, which up to the 11th century meant "boy" or "servant," and was specialised in the 12th century in the modern sense of *knight*, the mounted warrior of feudalism; or the introduction of foreign words to express new ideas acquired from abroad (e.g. the

Latin words, *pāpa* pope, *abbas* gen. *abbatis* abbot, *credo* I believe, adopted in Old English in the forms *pāpe* pope, *abbod* abbot, *crēda* creed, at the time of the introduction of Christianity, late 6th century); or to express new objects of trade, etc. (e.g. *sherry* from Spanish, *coffee* from Turkish, *tobacco* from American-Indian). It deals further with the names of persons and places, tracing their earliest recorded forms, and showing what words they actually consist of, or are compounded of.

In a way, the study of vocabulary is the least technical of the branches of philology, and perhaps on that account it is the most popular. But the independent study of the meanings of words and names, and the history of words in general, can be successfully pursued only if the student has a really sound knowledge of phonology.

A word may be defined as a group of speech sounds, or even a single sound, serving as the name of an object, representing an idea, or indicating the relation between ideas. Men do not talk in single sounds, however, nor usually in isolated words. Sentences are words in combination, groups of words (or sometimes even one word) in which a statement is made, a question is asked, a command or a wish or a state of mind, etc., is expressed, and so on. It is the sentence, with its natural rhythm, its intonation, its stresses, which forms the most natural unit of speech, and those who are learning a foreign language should begin as soon as possible to think, speak, or write in sentences, rather than learn isolated words.

It may be said here, at the risk of digressing, that modern English is far from being consistent and amenable to rule, and often cannot, even when used by the best writers and speakers, be made to fit into the framework of logical grammar, especially those "rules" of grammar which have been handed down by many generations of schoolmasters since classical times—rules which were based on the far more logical and consistent Latin usage. However, the old terms still remain, and for lack of something better they have to be used.

Form of the Sentence

Grammatically speaking, the normal (or ideal) form of sentence consists, or should consist, of at least two parts: (i) a subject; (ii) a predicate. The first draws the attention of the hearer (or reader) to something, while the second fixes the attention upon that thing in a particular way by limiting it to a special aspect or action. For instance, in *I am cold*, *Are you cold?*, *He was*

eating his dinner, the subjects *I, you, he* are the points on which the attention is focused; the other words in each case serve to limit the attention to a particular aspect of state or action. In practice, one of these two component parts may be omitted, and left to the hearer to supply for himself, the similarity of the habits of thought of people using the same language generally making this easy. Compare, for instance, the following answers to questions, where the words in square brackets are supplied (unconsciously) by the hearer: *Who has arrived?* *My brother* [has arrived]. *Is anyone here?* *A visitor* [is here].

Sometimes the subject as well as part of the predicate is omitted: *What are you doing?* *Reading* (= I am reading). *What did you see?* *An elephant* (= I saw an elephant). But these elliptical sentences do not complete the possibilities. In such simple but complete utterances as *Thanks, Off with you!; Well?; No!* it would be very difficult to say exactly what, if anything, is supplied by the hearer, but equally difficult to draw the line between them and the elliptical sentences referred to. Probably it is best to regard any word or group of words which gives us the impression of being a single complete utterance as a sentence, without attempting to define it more closely.

Accidence, Syntax

Accidence deals with the various methods—suffixes, prefixes, vowel-changes, and so on—by which slight modifications in the meaning of a word may be expressed, or the relation of words in a sentence to one another may be indicated. This forms a large part of what is generally understood by the term *grammar* (see the *Course on the English Language*, Vol. I).

Syntax treats of the sentence, as distinct from the individual word. It describes how words are arranged in a sentence, and explains how this arrangement may vary from period to period and from language to language. Syntax studies the use of certain forms (*cases*) of nouns or pronouns to denote

different connexions between them and other words, and differing forms of verbs to convey the ideas of time, person, etc.

Parts of Speech

The traditional classification of words, regarded as individual units, is into eight groups called parts of speech: noun, adjective, pronoun, verb, adverb, preposition, conjunction, interjection. These are briefly explained in the introductory Lesson on Language Study (Vol. I, page 254). But the examples given below show that these categories are not altogether satisfactory.

Some of the classes tend to overlap, and it is not always easy to assign a word correctly to its class. The first three, noun, adjective, and pronoun, are all very closely related. A pronoun, equally with a noun, acts as a label for an object or idea. The adjective is difficult to distinguish (if we must distinguish it) from a noun used to "qualify" or describe the object named by

another noun. Compare, for instance, a *mud pie*, a *gold watch*, a *Yorkshire pudding*, a *railway timetable*, with a *blue sky*, a *golden casket*, a *narrow lane*. It is impossible to find any difference in function between the words *leather* and *leathern* in a *leather(n) coat*, though presumably every grammarian would call *leathern* an adjective; while if *leather coat* had become a compound like *leather-jacket* or *wood-wool*, we should have no hesitation in saying that the two elements of the compound were both nouns. Compare similarly *railway time-table* and *railway-line*.

Writing

As an offshoot of the science of language, the history of writing is of great importance, since written documents form our chief clue to a knowledge of the languages of previous ages. The system of conveying an idea to an absent person by a symbolic picture or group of symbols, cut, scratched, or painted on wood, stone, bark, etc., is common to most primitive peoples.

EGYPTIAN	PHOENICIAN	GREEK				LATIN				HEBREW
𐀀	𐤀	Α	Α	Λ	α	Α	Α	Α	α	א
𐀁	𐤁	Β	Β	Β	β	Β	Β	Β	β	ב
𐀂	𐤂	Γ	Γ	Γ	γ	Γ	Γ	Γ	γ	ג
𐀃	𐤃	Δ	Δ	Δ	δ	Δ	Δ	Δ	δ	ד
𐀄	𐤄	Ε	Ε	Ε	ε	Ε	Ε	Ε	ε	ה
𐀅	𐤅	Υ	Υ	Υ	υ	Υ	Υ	Υ	υ	ו
𐀆	𐤆	Ζ	Ζ	Ζ	ζ	Ζ	Ζ	Ζ	ζ	ז
𐀇	𐤇	Θ	Θ	Θ	θ	Θ	Θ	Θ	θ	ח
𐀈	𐤈	Ι	Ι	Ι	ι	Ι	Ι	Ι	ι	ט
𐀉	𐤉	Κ	Κ	Κ	κ	Κ	Κ	Κ	κ	י
𐀊	𐤊	Λ	Λ	Λ	λ	Λ	Λ	Λ	λ	כ
𐀋	𐤋	Μ	Μ	Μ	μ	Μ	Μ	Μ	μ	ל
𐀌	𐤌	Ν	Ν	Ν	ν	Ν	Ν	Ν	ν	מ
𐀍	𐤍	Ξ	Ξ	Ξ	ξ	Ξ	Ξ	Ξ	ξ	נ
𐀎	𐤎	Ο	Ο	Ο	ο	Ο	Ο	Ο	ο	ס
𐀏	𐤏	Π	Π	Π	π	Π	Π	Π	π	ע
𐀐	𐤐	Ρ	Ρ	Ρ	ρ	Ρ	Ρ	Ρ	ρ	פ
𐀑	𐤑	Σ	Σ	Σ	σ	Σ	Σ	Σ	σ	צ
𐀒	𐤒	Τ	Τ	Τ	τ	Τ	Τ	Τ	τ	ק

EVOLUTION OF THE ALPHABET.
As the above table shows, most of the signs of the English alphabet are derived from the Latin alphabet. This came from Greek, the Greek from Phoenician, and Phoenician was allied to the Egyptian hieroglyphs.

The history of the development of modern alphabetic characters from such primitive origins is long, complicated, and still disputable in points of detail. Briefly, the next stage was the linking of symbols to tell a picture-story; then the adoption of one single, simplified symbol for one particular object, so that the *sound* of the word became closely linked with the symbol. Then the symbol was used to represent the sound syllable of the original object wherever it might occur in other words; and finally came the reduction to a relatively small number of symbols, each representing a single sound.

Egyptian hieroglyphs developed a considerable way along these lines, and there were important developments in neighbouring lands. The alphabet is thought to have been introduced into Europe by way of Phoenicia, first into Greece, then into Italy, many of the individual letters gradually changing in shape. Later the Romans carried the alphabet to the Celts of the west. The English, during the first centuries of their settlement in England, learnt a form of it from the Irish, and this, with modifications due to Continental influence, developed into the alphabet now in use.

LESSON 3

Language Groups and Dialects

A BRIEF examination of groups of the most ordinary words in English and in any of the languages of Scandinavia, Holland, or Germany reveals a resemblance too great to be a coincidence or to be explained by a system of wholesale borrowing, even if this were possible historically. The eight words tabulated below from five languages of western Europe will illustrate this. The words are given in their earliest recorded forms, though of course the resemblances persist in the modern forms.

Mod. Eng	Old Eng	Old Saxon	Frisian	Old Norse	Old High German
have	habben	habbian	hebban	hafa	naben
foot	fōt	fōt	fōt	fōti	fuoz
two	twā	twā	twā	tvæt	zwa
under	under	undar	under	undn	untar
fall	fallan	fallan	falla	falla	fallan
day	dag	dag	dei	dagr	tag
moon	mōna	māno	mōna	man	mānō
out	ūt	ūt	ūt	ut	ūr

There are many hundreds of words common to all or most of these languages, and the study of them leads to the conviction that the similarities must be due to a common origin. They are all, in fact, branches of one single dialect or language spoken by a community of tribes, who, by gradual migration, not as a whole but in groups, and partly by mixture with peoples using a different language, lost touch with one another's speech, and diverged in different directions from their common source. The name given to this common original is Germanic; we have to regard it as belonging to north-western Europe in the centuries that elapsed before the beginning of the Christian era.

Aryan Family of Languages

But the relations of English are traceable farther afield than this. Consider the table on the right.

Here, again, in view of the large number of words which show such resemblances, it is

necessary to assume a common origin. The earliest records of Sanskrit and Greek are so old that a common original must be dated at latest some four or five thousand years *b.c.* in order to allow time for the separate languages to have developed their individual characteristics. But this date is comparatively modern against the background of the thousands of years which have elapsed since man first acquired speech. As will be seen from the table, the relationship involves not only European languages: Sanskrit (ancestor of many of the Indian dialects) is included, Persian also is related; while besides the European groups already mentioned, Celtic (including Welsh, Irish and Scottish Gaelic), Slavonic, and one or two other groups can be brought into the same circle.

The ancient mother-tongue from which all these are descended is known variously as Indo-Germanic, Indo-European, and Aryan. Its daughter-languages are now spoken by millions of people, of widely differing races and cultures, in Europe and Asia, and in many other parts of the world to which they have been carried by European colonists and conquerors. The actual race and home of the speakers of the early, undivided Aryan language has been a matter of much dispute, and much work still has to be done by philologists, archaeologists, and ethnologists before the question can be settled.

In the period immediately before its break-up into differentiated dialects Aryan was by no means a "primitive" language, if by this term one implies simplicity of structure and vocabulary. It had descended from a long line of

Mod Eng	Old Eng	Latin	Greek	Sanskrit
acre	æcer	ager	agros	ajras
eat	ete	edō	ed(omai)	ad(mi)
brother	brōþor	frāter	phrāter	bhrātar
father	fæder	pater	patēr	pitar
mouse	mūs	mūs	mūs	mūs
two	twā	duo	duo	dvā(u)

ancestors and had developed a highly elaborate system of inflexion and a fairly rich vocabulary.

In addition to the Aryan family of languages there are other large groups: for instance, the Semitic family (including Arabic and Hebrew), the eastern Asiatic groups (Chinese, etc.), Polynesian, the African languages, and so on. Moreover, not all European languages are of Aryan origin. Among those which are quite unrelated to this family are Finnish, and Hungarian, Basque (the strange dialect of the Pyrenees), and, in former times, probably also Pictish in Scotland and Etruscan in north Italy.

English Language

English is that particular branch of the Germanic group of the Aryan languages which was brought to England in the 5th century by the invading tribes of Angles, Saxons, and Jutes. At that time these tribes apparently spoke a more or less uniform dialect; but after their settlement differences developed among the settlers in all parts of the country, though there is no question of their having been mutually unintelligible. Examples of all the dialects of pre-Conquest England have not been preserved, but documents exist from the south-west, from the north, from Kent, Surrey, Suffolk, and parts of the Midlands.

English displaced various dialects of Celtic spoken in Britain before the arrival of the Anglo-Saxons. But though there must have been, in many parts of the country, close contact between the new and the old inhabitants, English was little influenced by British. Without reckoning place-names and personal names, there are probably not more than half a dozen words in Old and Modern English which can be said with certainty to have come into the language by borrowing in the period of the Anglo-Saxon settlements.

It should perhaps be pointed out that the terms dialect and language differ only in degree, and can often be used with reference to the same thing. Thus English is usually spoken of as a different language from German or Dutch or Swedish, but all are dialects of Germanic. Similarly, Germanic and Celtic and Greek are all dialects of Aryan.

Dialect in England

During the early periods of the history of English, differences of dialect were such as arose through differences of geographical situation; but during the first part of the 16th century—perhaps even in the 15th—variations began to arise between speakers of differing social class in the same locality. This new type of dialect—class dialects, as they are called—has played an important part in the subsequent history of English. To-day it is a class dialect

that has been accepted as the standard of English speech, and the local or regional dialects are in most places being replaced by varieties of Standard English, modified in various directions by local speech habits. In the large towns one may hear several varieties of English, which may all be recognizably distinct from Received Standard, but distinct also in many ways from the earlier local type. These modified Standard dialects have not yet received much serious attention from scholars.

The dialects of a country may differ in pronunciation, vocabulary, grammar, and syntax. Differences of vocabulary are those which people usually find the most striking and interesting, but to the student differences in grammar and syntax are equally important.

Standard English

Modern Standard English, both written and spoken, is actually a class dialect which grew out of a regional dialect; it is the descendant of the speech of the upper classes of London in the early 15th century. It has now no longer any regional limitations as far as England is concerned, but is spoken with practically no variation in type in all parts of the country. But it was itself a blend, London being situated geographically at the meeting-place of two or more local dialect types. Thus in the present-day Standard more than one dialect type is actually represented. For instance, the form *knell*, with *e*, compared with *pit*, with *i*; though both are derived from Old English forms with *y* (*cnyll*, *pytt*, with *y* pronounced as French *u* in *lune*, though shorter), the former being a more south-easterly type than the latter. Again, the modern English words *flood*, *good*, *food* represent three different developments of one Middle English vowel (a long *ō*); but these are probably variants introduced from class dialects during the modern period.

The spoken Standard was a little slower in becoming widespread than was the written Standard. Of course, written English, with its conventional spelling, tends to conceal dialect variants which the spoken language may reveal. During the Elizabethan period and in the 17th century writers of perfectly conventional literary English often spoke a dialect of distinctly local character, but by the middle or end of the 18th century the spoken Standard had spread to more or less its modern limits.

The influence of local dialects is occasionally exerted on the vocabulary of literary English in a certain sense, by writers of importance who may specialise in a particular local dialect. But the influence consists rather in making certain dialect words familiar to readers than in initiating their use by other writers. Many Scottish words, for instance, were introduced to English readers by Scott and Burns and

Stevenson, and the writings of Thomas Hardy have familiarised some of the speech-habits of his "Wessex." But - and this is the important point—the words with which such writers have made readers acquainted have not become current coin in Standard written or spoken English to the extent of ousting forms already in use in either of these dialects, or of being used in reference to circumstances and conditions of life other than those to which they formerly belonged.

Occupational Terms

Another type of dialect which may have an indirect or limited effect on the standard language—in the domain of vocabulary—is the occupational dialect, with its own special vocabulary of technical terms: medical, nautical, athletic, and so on. When any of these terms

have been introduced into Standard English, it has usually been by way of metaphorical or slang expressions. To this class belong many military words (often slang) which became familiar during the two world wars.

The influence of local dialects on grammatical forms and pronunciation is even less than on vocabulary in modern times, and this is apparently true also of earlier days nearer the time of the first development of the Standard type. On the other hand, Standard English, whether the Received or the Modified variety, has had a great effect on all aspects of local dialects—vocabulary, pronunciation, grammar, syntax—especially in recent years, through the influence of state schools and teachers, the levelling effect of speech heard on radio and television, and the greater freedom of intercourse among speakers of different dialects.

LESSON 4

Speech and Spelling

ALTHOUGH the spoken language is of primary importance in philology, there are two aspects of the written language that need to be touched upon. The first is concerned with the indication of changes in sound by difference in spelling, the second with the influence of spelling on pronunciation.

English orthography has undergone little alteration since the 15th century; before that time, since English records began in the 7th century, the spelling followed changes in the speech-sounds of the language. A considerable time always elapses between the modification of a sound and its recognition in writing. A quarter or even a half of a century may pass before the new spelling is generally accepted. People do not often realize the unconscious changes in pronunciation which take place in their own lifetime. It is left for a succeeding generation to appreciate the fact that they are using, in a particular group of words, a different sound from that uttered by, say, their grandfathers, and to reflect this—to some extent mechanically—in written symbols.

Sound-changes

Thus, when in a certain group of words (all those containing the same sound under the same conditions) a different symbol is found to occur—first occasionally, then frequently, then universally—the sound-change which this indicates has to be dated anything from twenty-five to fifty years earlier. To give an example of the gradual introduction of a new spelling to mark a change in sound: in a certain English document written in 1154 (part of a historical chronicle written at Peterborough) we find the word *mor*

(more) spelt thus in four places, whereas elsewhere in the manuscript, and everywhere before this date, it is always spelt with an *a*—*ma* (Old English *ma(a)*, with the same vowel as in *father*). One or two other words in the same document show the same change, and the new spelling is found also in similar words in another text of only slightly later date. From then until the early 13th century words that formerly were spelt with *a* (representing the long vowel indicated above) are written sometimes with *a*, sometimes with *o*, or with *oa*; examples are *bon* (O.E. *bān*, bone); *hom* (O.E. *hām*, home); *on* (O.E. *ān*, one); *rod* (O.E. *rād*, road).

Runic Alphabet

After about 1215 the new spelling became practically universal in southern England as far as the Humber and the Ribble, north of which the change in pronunciation referred to above did not occur. Now, if there had been no sound change there would have been no reason for a change in spelling; and if the alteration in spelling had been at first merely the mistake of a scribe, it would not have spread and been repeated by scribes from all parts of the country within the limits mentioned. Thus it is clear that this spelling change reflected a sound-change from *ā* to *o* in many words.

Before the 15th century such changes in spelling were a normal consequence of changes in pronunciation. Old English spelling up to about the beginning of the 12th century was fairly uniform, and for the most part was unambiguous, not using the same symbol for more than one sound, and expressing each sound nearly always by the same symbol.

The English alphabet used in manuscripts was of Latin origin, introduced by Irish scholars, but before this came into general use another alphabet had been employed, both in this country and by the Germanic peoples on the Continent. This was the runic alphabet, also ultimately of classic origin; examples of it now survive in inscriptions on stone, and on objects such as cups, drinking-horns, coins, and caskets, in Britain and in the Scandinavian countries. Runic letters were occasionally introduced into vellum manuscripts for various reasons (one poet used such letters to form a kind of acrostic on his own name, as a signature to his poems), and examples of complete runic alphabets, written down by antiquaries of the Early Middle English period, have also been preserved. One of the best-known runic monuments is the sculptured cross at Ruthwell, in Dumfriesshire, which bears lines from an Old English poem.

Two letters from the runic alphabet were adopted for use in Britain as a supplement to the Latin alphabet. One is the symbol þ (known as "thorn"), used for the *th*-sound, by the side of the "barred *d*" (ð); the scribes did not distinguish between the voiced and voiceless *th* (i.e. *th* in *this* and *thin*), but used either þ or ð for both. Another runic letter is the Old English symbol for *w*: *ƿ* (known as "wen," the runic symbol for "hope"). Some early scribes used *uu* for this sound, and this symbol, modified to *ƿ*, was generally introduced after the Conquest. The symbol *ƿ* went out of use in Early Middle English, and was sometimes confused with þ, which led to mistakes in the copying of manuscripts.

Ambiguities

The ambiguities in O.E. spelling, beside the indiscriminate use of þ and ð, consist in the use of the letter *c* to express two different sounds (i.e. *k*, and a sound something like *ch* in *chín*), and of the letter corresponding to *g* to express three different sounds. It is not usually difficult for a student of Old English to determine the sound of *g* or *c* in a particular word, with the help of the subsequent history of the word, or of the sounds of related languages, but in some instances the pronunciation still remains problematical.

To mark long vowels Old English scribes sometimes used an accent, rather like a grave accent with a hook at one end, and sometimes a double vowel. Abbreviations and contractions were few in number. A horizontal stroke above a vowel (e.g. *ā*) was occasionally used to indicate a following nasal. The word *and* is usually expressed by a symbol shaped like the numeral 7.

The Scandinavian invasions of the 10th and 11th centuries, though they influenced the vocabulary of English, had little effect on the

spelling. One result of their influence was the establishment of the letter *k*, which was rarely used in Old English.

The coming of the Normans, with the consequent influx of continental-trained scribes, introduced many new habits. A few of the Old English letters were given up. One of the first to go, as already mentioned, was the symbol þ. The O.E. vowel *æ* was not used by the French scribes, but this is partly due to the change of the sound which it represented to *a* or to *e*. The consonants ð and þ, though they lingered until the 15th century, were gradually replaced by *th*. Where þ was kept, its form was altered, the loop becoming open at the top, and it was often indistinguishable from *y*. The word *the*, formerly written "þe", was thus written as *ye*. This survives in "Ye Olde Tea-Shoppe" English.

The letter *y* was used in the O.E. period for a sound like that of the vowel of French *u* in *lune*. This sound persisted in Middle English, both in English and in French words, but the letter *u* (sometimes *ui* when the vowel was long) was used for it by Anglo-Norman scribes. The letter *y* then came to be used as equivalent to *i* (the short vowel now heard in *bit*, or the long vowel of *beat*), and was especially frequent in the neighbourhood of *n* or *m*, for distinctness, the "minims" (down-strokes) of *n* and *m* being indistinguishable from *i*. (The *i* was not dotted at this period, though *y* often was.) Similarly *u* was avoided in conjunction with these letters, or with *w* and *v*, the letter *o* being written instead from the middle of the 13th century onwards; this spelling has in many cases survived, e.g. in *son*, *some*, *love*. About the same period *ou* was introduced for the long *ū*, and this spelling was not altered when *ū* changed to its present sound (e.g. in the word *house*); hence to many people *ou* is the most natural way of representing this modern diphthong.

Middle English scribes frequently wrote two vowels to represent a long vowel sound, especially *ee* for a long *ē* and *oo* for a long *ō*. These vowels have now changed in value, but the spelling remains. The O.E. diphthong *ea* became a long *ē* (as in French *être*) in Middle English, but the spelling was sometimes retained to represent a long *ē* (now the vowel of *stream*) of this or of other origin.

Modern Spelling

The spelling of Modern English was largely conventionalised by the scribes of the late 14th century, and their habits were followed by the first English printers of the late 15th century. It is because the printers' spelling ignored the large number of vowel-changes which had taken place in the early 15th century that Modern English spelling is out of gear with all the other European countries which use any form of the Latin alphabet.

There has been little change in conventional English spelling since the early 15th century, and present-day orthography therefore ignores the extraordinarily numerous and important changes in pronunciation which took place during that century and after. There has been at the same time a growing tendency in England for people to accept the modern English spelling as a guide to pronunciation. This principle of pronouncing a word as it is spelt has thus been responsible for the introduction of a number of bogus pronunciations, some of which have become more or less universal.

Pronunciations Based on Spelling

A simple example is the pronunciation of the consonant *t* in the word *often*. There is definite evidence that the sound *t* disappeared between *f* and *n* or *s* and *n* (there was probably no intervening vowel) in all words such as *often*, *soften*, *fasten*, *hasten*, *listen*, or between *s* and *l*, as in *whistle*, *castle*, *epistle*, four or five hundred years ago (even Queen Elizabeth I wrote *often*). But although the sound vanished, the letter was fossilised by the printers and remained in the spelling, so that later generations, reared on "book-learning" only, began to pronounce it again.

A further example is the introduction of an initial aspirate in words of French origin. The English language borrowed from French

during the period 1200-1400 such words as *humble*, *hour*, *honour*, *human*, *heir*, and others, in which an initial *h* was written in French (and continued to be written in English), but was no longer pronounced in French at the time of borrowing; and the aspirate was certainly not introduced at that time into English pronunciation in these words. However, during the last century a tendency has arisen to insert an initial aspirate in some of them. Most people now pronounce *human*, *humour*, and *huge* with initial *h*, though their great-grandfathers would have been shocked by the innovation. *Humble* and *herb* are pronounced *umble* and *erb* only by very old-fashioned speakers. (This is not, of course, taking into account those who never use an initial aspirate at all.) Perhaps after a generation or two *heir* and *honour* will be pronounced with an *h* because they are spelt with one.

Conversely, before spellings were crystallised by printing, some curious spelling changes came about through mishearing of the spoken words. A good example is the transference of the initial *n* of a word to the preceding indefinite article. Mod. Eng. *an addler* was originally *a naddler* (O.E. *nædre*); *a napeton* (cf. *napery*, *napkin*) became *an apion*; and *a numpire* (Fr. *nonpareil*) became *an umpire*. In the reverse direction, *an ewt* became *a newt* (the older form survives in dialectal *an eft*).

LESSON 5

Sources for the Historical Study of a Language

This Lesson deals with its subject from the point of view of the study of English, but the early sources for the study of most other modern European languages are of a similar character.

The beginning of the history of English in England lies in the 7th century, the date of the first written documents in England, some two hundred years after the settlement in this country of the Germanic tribes known as the Angles, Saxons, and Jutes. The invaders brought with them from their continental home and carried into all except the most remote parts of England a language which gradually split up into a variety of dialects. With the exception of some *possibly* earlier inscriptions on stone, the earliest writings in English are legal documents. The earliest of all is apparently a charter (now in the British Museum) granted in 692-3 by King Ethelred of Essex to the abbess Ethelburh, in respect of land at Dagenham and elsewhere. This is in Latin, but the names of persons and places are English.

From very early in the 8th century there are three examples of glossaries, roughly alphabetical lists of Latin words with Old English equivalents, e.g. *allum* : *garlec* (= garlick); *alhaspina* : *hagudorn* (= hawthorn); *castorius* : *hebir* (= beaver); *ebor* : *elpendes ban* (= elephant's bone, ivory); *nimbus* : *storm*, etc., etc. These come from the Midlands; they include several hundred words.

Earliest Sources of English

There are a few fragments of verse from Northumbria dating from the 8th century, such as the *Deathsong* of the Venerable Bede (d. 735), which consists of five lines, and the nine-lined "Hymn," which is all that can with complete certainty be ascribed to the poet Cædmon. It begins:

*Now we must praise heaven's Guardian,
Nu scylun hergan hefenrices uard,
the Creator's might and his wisdom,
metudæs mæccti end his modgicand,
the work of the father of glory; as he every wonder,
uerc uuldurfadur; sue he uundra gihwæes.*

the eternal Lord, first established,
 eci Dryctun, or astelidde,
 He first made for the sons of men
 He aerist scop aelda barnum
 heaven for a roof, the huly Creator
 heben ul hrofe, haleg scepen

This is preserved in one manuscript (at Cambridge) of Bede's (Latin) *Ecclesiastical History*, in which Caedmon's story is told.

From about the same period, and also from the Northumbrian area, there are the short inscriptions, in runic characters, on the Franks casket (so called from the name of the donor), now in the British Museum. The top and sides of this are ornamented with carved pictures, which the inscriptions explain (see accompanying illustration). On one side, for example, there is a carving of Romulus and Remus and the wolf, their foster-mother; this is described, in a band of letters extending all round the picture:

*oþlac unneƿ romwalus and reumwalus twæƿen
 gihrope apeddæ hie wyrtf in romwæstri.*
 "Far from their native land Romulus and Remus,
 two brothers; a she-wolf led them in Rome city"

Old English Documents

In the next century (the 9th) written documents become more plentiful. To this century belong the works of King Alfred, followed in the next century by further prose works (also surviving in contemporary manuscripts) written by the great king's imitators and by scholars to whom his work had given a stimulus. These wrote in the dialect of Wessex (called West Saxon); but there are also examples of 9th-century English from Northumbria and from the Midlands, in English translations written between the lines in Latin copies of the gospels. The most famous of these is that called the Lindisfarne Gospels, now in the British Museum, where the English version is written into a magnificent 8th-century manuscript of the four gospels in Latin.

It is not until the very end of the 10th century that, except for the fragments referred to, verse can be added to the linguistic material. There is a large amount of Old English verse still in existence (approximately 30,000 lines); but though most of it was composed in the north, before the days of King Alfred, it has survived only in manuscript copies made about the year 1000, in Wessex, and the northern dialect of the originals has for the most part been "translated" by the copyists into the dialect of the south-west.

During all this period legal documents and other forms of non-literary prose are fairly numerous; and since the place of origin of many of them can be definitely ascertained, they form a valuable source of information on local dialect conditions.

From about 1050 to 1150, the first century after the Norman Conquest, English documents of all kinds are scarce. When they begin to be plentiful again, rather different conditions are found. There is now no literary standard for English, and writers use, not the pre-Conquest, tacitly accepted standard of West Saxon, but whatever local dialect they happen to speak. Thus every scrap of literary material is of interest to the philologist. Only a few sources can be mentioned here as illustrating especially well the language of their particular areas: the historical annals kept at Peterborough down to 1154 and known as the Peterborough Chronicle (especially that part written between 1135 and 1154); the great epic poem of British history called the Brut, written by Layamon very early in the 13th century, near Bewdley in north-west Worcestershire; the late 13th-century rhymed chronicle of Robert, a monk of Gloucester; the early 14th-century collection of poems made at Leominster in Herefordshire; the works of Robert of Brunne (Bourne in Lincolnshire) between 1300 and 1330; the Yorkshire writings of Richard Rolle of Hampole, in the same period; and the *Avenbite of Inwit*, or *Biting of Conscience*, a long religious work written at Canterbury about 1340. These all possess literary as well as philological interest.

Ancient Archives

England is fortunate in having an almost inexhaustible supply of historical records still preserved in public collections and occasionally in private ownership. They begin in pre-Conquest times, with charters and similar legal documents. After the Norman Conquest, as the machinery of law and justice and national finance becomes more intricate, official documents become more and more numerous. The names of those who have paid or are liable to pay certain taxes or fees are listed, as are also the names of those who bring pleas to, are accused in, or act as jurors in, the courts of justice. Landowners, including the great monasteries, have lists of their tenants, and catalogues of the portions of land they own, with details of their boundaries.

Most of these records are in Latin (some in Anglo-Norman), but all contain English names of persons and places; and since English names are simply English words and develop along the same lines, they provide valuable information about the state of pronunciation in different parts of the country.

Much of this type of material is in the Public Record Office, London. A considerable amount has been published under government supervision by historical societies, and hundreds of volumes of Hundred Rolls, Fine Rolls,



Runic characters on Franks casket

Pipe Rolls, Subsidy Rolls, State Papers, and others (including Domesday Book) occupy a large amount of space on the shelves of the great public libraries. There are also collections similar to that of the Public Record Office, though on a smaller scale, in the archives of numerous English boroughs in varying states of preservation; many of these still remain unpublished.

Effect of Printing on Spelling

In the 15th century a new era in the history of English began. The introduction of printing into England towards the end of the century led to a very rapid conventionalising of spelling, and though changes in pronunciation were in progress they are obscured by the printers' firmness in adhering to traditional forms of spelling. The best sources are thus such writings as did not pass through the hands of professional scribes or printers but were produced by men and women who not infrequently use an unconventional type of spelling, and thus betray the actual sounds they are using.

In Middle English spelling the vowels had what are sometimes called continental values; for instance, *a* (long) was pronounced like the *a* in *father*; *e* (long) like the vowel of French *fête*, *i* (long) like the vowel of Modern English *see*, and so on. Some time during the early 15th century the vowel *ā* had become like the vowel of French *fête*, and when a 15th century writer spells a word such as Middle English *tāke* (take) as *teke*, we can recognize that this change has already taken place. Similarly, when a writer uses the form *wossh* for "wash," we can see that the latter word no longer has the same vowel as *splash* (as it had in Middle English), but has been changed through the influence of the consonant *w*.

The cumulative evidence of many hundreds of such unconventional "occasional" spellings, as they are called, has laid the foundation of a sound knowledge of the pronunciation of English in the period 1400-1700. The best material is to be found in private letters and diaries which have remained unpublished until

recent years or are still in manuscript. Many of these have considerable historical interest, and some make very entertaining reading. To give a few examples: the *Paston Letters* (ed. J. Gairdner), coming from a Norfolk family of the 15th century, are well known. The *Cely Papers* (published by the Camden Society), of the same century, come from Essex; they were written by a group of people less well educated than the Pastons. In the 16th century Queen Elizabeth's letters are full of interest; and from the same period, but from a different social class, can be mentioned the *Diary of Henry Machyn* (Camden Society), a London undertaker, with little education but a busy pen, who had a keen professional interest in ceremonies and processions, as well as in funerals.

Informative Women

The most interesting 17th-century collections are the letters of the Lady Brilliana Harley (of Herefordshire), published by the Camden Society, containing a graphic picture of local events during the Civil War; and the papers of the Verney family (of Buckinghamshire). The *Wentworth Papers* (ed. Cartwright) illustrate excellently the colloquial English of the early 18th century. In all these collections of letters the most informative to the philologist are those written by women, for they are much freer and less conventional in style and spelling than those of the men.

From the 16th century onwards recourse can be had to a long series of books on English spelling and pronunciation. Some of these are in English, some in Latin; others, for foreign speakers, are in French, German, Danish, etc. They are not so useful as they might be, since the authors are often poor observers, untrained as phoneticians and obscure in style, and they consistently confuse sound and spelling. Considerable ingenuity is required to wrest a meaning from their tortuous statements. The best of them are the 17th-century writers John Wallis (*Grammatica Linguae Anglicanae*, 1653) and C. Cooper, whose *Grammatica Anglicana* was published in 1685.

LESSON 6

Sound-changes and the Importance of Analogy

No language that continues to be spoken and used as a natural medium of communication can remain for any time in a state of stagnation. Speech is continually and unconsciously being adapted by everyday use, in its vocabulary, grammar, and syntax, to the needs of those who speak it. Equally unconscious, though rather more puzzling, are the changes in

sound which are constantly occurring, and which make the language of earlier periods so unintelligible to the modern speaker. Why at a certain period did the vowel pronounced like the *a* of *father* become something like the *o* of *bone* in all the words in which it occurred? Why did the vowel which sounded like the *ee* of *green* (but was written *i*) become in the 14th

century the diphthong now heard in *lie*? Why was there a tendency in the 15th century among some groups of speakers to transform the *o* of *spot*, *top*, etc., into the vowel *u*: *spat*, *tap*, etc. (a change perpetuated in a few words such as *sprat*, earlier *sprot*)? To such questions no very definite answers can be given.

First Sound-shift

During some periods in the history of a language sound-changes are few and unremarkable; at other times the rate of change seems to quicken and a number of important and striking differences in speech-sounds will arise within a century or so. In one such period the Germanic consonant-system developed, a large proportion of the consonants which Germanic had inherited from its mother tongue being then definitely altered; for instance, *p* became *f*, cf. English *father*, Latin (and Indo-Germanic) *pater*; *d* became *t*, cf. Indo-Germanic *dwā*, Eng. *two*, Latin *duo*, and so on. This group of changes, which happened between 400 B.C. and 100 B.C., is usually known as the First Sound-shift. A later series of consonant changes, often called the Second Sound-shift, and affecting the dialects of central and southern Germany only, took place during the 6th century (cf. German *wasser*, Eng. *water*; Germ. *schiff*, Eng. *ship*).

Great Vowel-shift

In the history of English the most striking periods of change have been in the 5th and 6th centuries and in the 14th and 15th centuries. In the latter period almost all the vowels and diphthongs in use in the 13th century developed a different pronunciation. In some instances this meant the development of a *new* vowel; in others the new pronunciation meant the introduction of a vowel already in use in another group of words. These 14th-15th century changes are sometimes referred to as the Great Vowel-shift.

Two distinct types of sound-change are generally recognized: isolative and combinative. In the former a sound varies in all the words in which it occurs, irrespective of other sounds in the word (an example of this is the change of *ā* to *ō* referred to above); in the combinative the change itself, and the direction of the change, are conditioned by neighbouring sounds.

For instance, in the 7th century a number of vowels of a particular character underwent a change in a certain direction when followed by an *i* or a *j* (pronounced like *y* in *you*) in the next syllable; the vowel *ā* under these conditions became *ȳ* (like French *u* in *lune*). Thus the noun *mūs* had a plural *mūsi*, which became *mȳs*; by later, isolative, changes this pair became *mouse*, *mice*. Or, to give an example of a consonantal change: in the 6th century, or

even earlier, the English *k*-sound, before the vowels *e*, *i*, became something like the modern *ch*, though it remained as *k* before *a*, *o*, *u*; cf. *chin*, *child*, with *can*, *could*, all these four words being pronounced with *k* before the 6th century.

A more modern example can be seen in the special development of *ā* to the diphthong *au* (pronounced as *ow* in *cow*) before *l*, in the 14th century; this *au*, by a later, isolative change, acquired the sound of *aw* in *law*. This explains the modern pronunciation of *hall*, *call*, *small*, etc., as compared with *man*, *hat*, these last showing the normal development of Middle English *ā* when unaffected by combinative influences.

Foreign Influence

Sometimes the influence of a foreign language or foreign speakers may have something to do with the initiation of a widespread series of sound-changes. It has been suggested that one of the chief causes of the First Sound-shift was the fact that the Germanic peoples, in the course of their migrations southward and westward between 500 and 100 B.C., came into contact with tribes speaking a language or languages of a very different type. Similarly it is possible, though hardly capable of proof, that it was the influence of French or Anglo-Norman speakers in the 12th and 13th centuries which gave the impulse to the Great Vowel-shift.

One of the strongest factors in preserving a language as an ordered system, but at the same time an influence capable of altering the form of words and the structure of sentences, is the principle known as analogy. This is a process by which the derived forms of individual words required to express a certain meaning or syntactical relation are constructed by the speaker in the moment of speaking to accord with what may be called accepted models. No one learns or attempts to carry in his memory the complete declension of every noun, the complete conjugation of every verb, all the adjectives that can be formed from a noun, the comparative and superlative of every adjective, and so on. In the native speaker and in the fluent foreign speaker the process of analogy is constantly at work, supplying without hesitation, as required, the necessary formative elements.

Changes by Association

Words and forms are grouped together by associations of various kinds, the two chief being *association of meaning* and *association of function*. To the former belong such groups as names denoting relationships (father, mother, brother, sister, etc.), names denoting measurements (mile, yard, foot, stone, pound, ounce, etc.). As an example of the influence of some members of such a group upon others we may instance the substitution of *th* for *d* medially in

father, mother (Old English *fæder, mōder*), on the analogy of *brother* (O.E. *brōðor* ; *ð* → *th*) ; or the uninflected plurals—in certain usages—of the whole group of measurement-nouns (*yard, stone, etc.*) owing to the fact that some of them in Old English were neuter nouns with unchanged plurals ; or the change of the ending *t* to *th* in the ordinal numerals *fifth, sixth* (O.E. *fifta, sexta*), on the analogy of *seventh* (O.E. *seofoda*), etc. Or, to take a point affecting pronunciation only, we may note the word *sacreligious*, the last three syllables of which have been influenced by the unrelated *religious*, so that the third syllable has a short instead of a long vowel.

Association of function can be illustrated from any of the formative elements used to express modifications in meaning or relation. For instance, the idea of "more-than-one" is associated with the letter *s* (or *es*) in writing, and the sounds *s*, *z*, or *iz* in speaking, and we have no hesitation in constructing the forms *cats, cows, hippopotamuses* as the plurals of *cat, cow, hippopotamus*. (The last example illustrates the effect in English of applying the same analogical principles to foreign words as to native ones ; the "learned" plural, *hippopotami*, is not in popular use.) This plural in *-s* (O.E. *-as*) is now by far the commonest in English, but before the Norman Conquest it was rivalled by plurals in *-u*, in *-a*, in *-e*, in *-en* (as in *oxen*), in *-iu*, by unchanged plurals, by plurals with changed vowel. Nearly all these varieties have now yielded to the analogy of the *-s* plural, which belonged originally only to a large group of nouns in one of the nine or ten declensions of Old English. The French words with plural in *-s*, introduced after the Conquest, helped to establish the *-s* as the normal plural ending.

A few of the Old English plurals with changed vowels have survived—all of them, it should be noticed, very common words, which alone have a chance of continuing to exist in peculiar forms : *tooth* - *teeth*, *goose* - *geese*, *foot* - *feet*, *mouse* - *mice*, *man* - *men* (in O.E. *tōð* - *tēð*, *gōs* - *gēs*, *fōt* - *fēt*, *mūs* - *mȳs*, *mann* - *menn*). Other nouns which originally had this type of plural are *hook, goat, oak* (O.E. *hōc* - *bēc*, *gāt* - *gæt*, *āc* - *æc*), etc. ; if these had not been re-formed by analogy with the *a*-plurals, we

should now have the pairs *hook* - *beece*, *goat* - *geet*, *oak* - *eech*. Children sometimes use the plurals *foots, gooses*, etc.

Verbs have been very strongly affected by the working of analogy, even if their history is traced only as far back as the beginning of written records in Britain (c. A.D. 700). The two main classes, weak and strong (i.e. those which form their past tense by adding *d* or *t*, and those which form their past tense without *d* or *t*, but usually with a vowel change), still survive, but there have been changes within these groups, and even changes from one group to another. In Old English the strong verbs can be arranged in seven classes, each of which had four principal forms with differing vowels, forming the basis of the conjugation. The verb "to steal," for instance, had infinitive *stēlan*, past tense singular *stael*, past tense plural *stālon*, past participle *stōlen*. In Modern English the vowel of the past participle (it was lengthened in Middle English) has been introduced into the past tense, singular and plural, and we now have only two vowels in the conjugation : *steal* - *stole*(n).

In some instances three distinct vowels have survived, e.g. *drive* - *drove* - *driven* ; in O.E. the four principal parts were infinitive *drifan*, past singular *drāf*, past plural *drifon*, past participle *drifen* (the last two having the same stem-vowel). Now the past plural has the same vowel as the past singular. Some verbs, such as *sing* - *sang* - *sung*, retain three different vowels, though others of the same class have now only two : *fling* - *flung*, *sting* - *stung*, etc.

Examples of verbs which have changed their group, are *hide*, which, though originally weak, has now a strong past participle : *hide* - *hidden*, on the analogy of *ride* - *ridden* ; and *help*, now *help* - *helped*, with weak past tense and past participle, though in O.E. the four parts were *helpan* - *halp* - *hulpon* - *holpen*.

French verbs adopted in Middle English were normally inflected on the model of the weak verbs (e.g. *pass* - *passed*), but occasionally strong forms are found, e.g. *strive* - *strove* - *striven* (Old French *estriver*), on the analogy of *drive* - *drove* - *driven* ; and in Middle English are found variants such as *escape* - *escape* - on the analogy of *wake* - *woke*, etc.

LESSON 7

Semantics, or the Study of Word Meanings

THE study of the meaning of words, of the changes of meaning arising during the course of the history of a language, and of the similar and dissimilar meanings of related words, is known as *Semantics*. This Lesson deals with changes in meaning which can be

traced since the beginning of the written history of English, and gives some account of the often very surprising developments, dating from still earlier periods, in the history of English and languages related to it. On the whole the three chief directions of change are those which

may be labelled *pejoration* (a change in which a word develops an uncomplimentary sense), *expansion* or *generalisation* of meaning, and *specialisation*. Not all changes, however, can be included under these categories, and, moreover, an old meaning often survives alongside a more recent one.

Meeting New Needs

A change in culture, religion, social outlook, or fashion, often produces new facets of significance in older words. There are interesting examples of this in Old English, where, with the introduction of Christianity in the late 6th and early 7th centuries, English words and religious terms were adapted in sense, or new compounds were formed from native elements, to meet the needs of the new faith. (For some technical ideas, however, the English borrowed terms from abroad; these are dealt with in a later Lesson.) Many words used in new senses can be found in the writings of King Alfred, of Ælfric of Eynsham, of Wulfstan, and of other religious writers. Some of them have died out, though many survive. Thus *Lent*, O.E. *lencten*, which first meant "the season of spring" (the word is related to *long*, and implies the time when the days lengthen), is used already in the ecclesiastical sense in the early 11th century. The two meanings survive side by side in Middle English. The modern *Easter*, O.E. *Eastre*, was originally the name of a goddess of the rising sun, but was adopted by the English Christians as the name for the feast of the Resurrection.

The Old English *fēond*, "an enemy," modern *fiend* (ultimately the present participle of a verb meaning "to hate"), was often specialised in the sense of "the devil." The word *weih*, originally "a holy shrine" (cf. Gothic, *weihs*, "holy"), was debased in meaning, and became a "heathen shrine; an idol." The word now survives only in place-names, such as Weedon, which must have been the site of a pagan temple. There were also formed from elements already existing, such compounds as *godcund*, "divine," *godspell*, "gospel" (good message, translating the Latin - from Greek - *eu-angelium*), etc. Similar results of a fresh influx of cultural ideas may be traced in Middle English, as, for instance, the development of O.E. *cniht*, "a boy, servant," in the specialised sense of a feudal *knight*.

Word Specialisation

Sometimes a word has become specialised after the introduction from a foreign language of another term denoting the more general idea; O.E. *dēor* (Mod. Eng. deer) meant "an animal" in general, but as *beast* and *animal* (from French and Latin) gradually displaced it, it became limited to its present sense. The ordinary word in Old English for "to smell" was *stincan*; *smell* ousted it to some extent in Middle English,

and *stink* now has only the sense of "to smell unpleasant," or, as a noun, "a bad smell"; nouns denoting "pleasant smell" all come from French: scent, odour, perfume, fragrance.

Varied Uses

The word *pipe* was applied originally to a tubular musical instrument, and the term in English (and the corresponding word in other languages) was used later for other objects resembling this in their tubular shape; the word acquired first the general sense of tube, and was then specialised again in various directions, though in some of these senses *pipe* can be regarded as abbreviated from a compound: drain-pipe, gas-pipe, wind-pipe, and, especially, tobacco-pipe. We have a similar series of specialisations for *glass*, which is used variously for objects made of glass, the full sense being supplied by the context: e.g. (a) tumbler, (b) barometer, (c) mirror, (d) telescope, etc.

A word which has been much limited in popular use is *doctor*. It was used formerly (and, of course, is still in academic circles) of one who had taken the degree of doctor (it simply meant "learned") in any faculty—medicine, theology, law, philosophy, etc.; but as doctors of medicine came most into contact with the outside public, the word came to mean specifically a physician, and is now often used in referring to, or as a form of address to, practitioners who have not taken the degree of M.D. Another word of restricted significance is *wade*, which in Old English meant simply "to go, move, travel," and now denotes only "to go on foot through water."

On the other hand, the verb *drive* was applied in Old English only to the act of "driving" cattle, sheep, etc., that is to say, causing them to proceed and controlling their progress along a road, etc.; now the senses are very varied, and one can drive a train or a motor-car.

Degenerated in Meaning

Among words which have degenerated in meaning is *giddy*, which is apparently related to *god*, and meant originally "inspired by a god, in a state of ecstasy." In Old English it meant "insane," and it is now used of persons suffering from vertigo, or, in a moral sense, of persons showing a lack of balance or stability of character. The word *sick* (O.E. *sēoc*), used generally of a state of ill-health, is now, by a change of fashion, often replaced by *ill*; the old usage still obtains in America. Fellow is not now used as a polite form of address, though it retains its early meaning in reference to Fellows or members of a governing body of a college; in the sense of "companion" it has largely gone out of popular use. Another word which has degenerated in meaning is *silly*; Old English *sælig* meant "happy, blessed"; this developed into "innocent," and then into "simple-minded, stupid."

In the same way English words can be considered in relation to other languages, and the divergence of their meanings from those of their common ancestors four thousand or so years ago can be seen. In the following examples words or forms which have been reconstructed in accordance with recognized rules of development but are not recorded in writing are marked with an asterisk; most of these are quoted in the form in which they must have existed in Indo-Germanic, the common ancestor of English, German, etc., and of Greek, Latin, Celtic, Slavonic, Sanskrit, and others.

An interesting connexion can be traced between the words *delirium* and *learning*. The former, a word borrowed by English from Latin *délirium*, is formed from the Latin verb *délirāre*, which in a figurative sense meant to be deranged, delirious, but, literally, to turn aside from the furrow in ploughing; the Latin word *lira* meant the ridge of earth between two furrows, and, finally, the furrow itself; from this came the verb just mentioned (*dē* = from, out of). In the parent language there was a group of words (from one of which *lira* comes) **leis-*, **lois-*, **lis-*, meaning a ridge of earth, a rut, a trail or track. In the Slavonic languages the words derived from this group have become specialised in the sense of furrowed ground, hence cultivated land, and sometimes garden bed (e.g. Lithuanian *lyse*). In the Germanic languages the significance is rather in the direction of trace, track; thus German has a word *Geleise*, track; Gothic *lausts*, track; corresponding to the latter are the Old High German *leist* and Old English *laest*, a track, a footprint, a shoemaker's last. Further, Germanic **lais*, etc., in the sense of following a trail, came to be used figuratively in the sense of obtaining information, acquiring knowledge; hence Gothic *lais*, I know, and *laisjan*, to teach or learn, and its Old English relations *leornian* (Mod. Eng. *learn*) and *leran* (Chaucer's *lere*), both used in the senses of to learn and to teach.

From Wool to Fight

Another group with widely divergent developments is that derived from Indo-Germanic **pek-*, meaning wool, hair. Some of the descendants of this word have kept the original sense more or less exactly; Greek *pekos* meant wool, fleece; Sanskrit *paks-man* hair, eyebrows; O.E. *feax*, hair (now only in names, such as *Fair-fax*); O. Norse *fax*, mane (students of Norse mythology will remember the horses *Gullfaxi* and *Skinfaxi*, Gold-mane and Shiny-mane). Closely connected with Indo-Germanic **pek-* is the form **peku-*, an animal considered valuable on account of its wool; hence Lat. *pecus*, cattle, from which arose the sense of property, possessions (hence Lat. *pecūnia*, property, money, as in Eng. *pecuniary*, and *pecūlium*, private property, whence English *peculiar*), and O.H.G. *fihu*, O.E.

feoh, cattle, money; from the last (O.E.) word comes Mod. Eng. *fee* in the sense of money. But this is not the end of words derived from Indo-Germanic **pek-*. With the suffix *-t-en*, **pekten* is applied to a toothed instrument for arranging the hair, a comb; cf. Lat. *pecten*, a comb, and the Greek *kteis*, genitive *ktenos*, earlier **pktenos*, in the same sense. In Germanic the form derived from **pek-t-* seems to have been generalised from a comb to any pointed instrument and hence we have the verbs O.E. *fehtan*, O.H.G. *fehlan*, O. Frisian *fuchta*, all meaning originally to use a pointed instrument or weapon, and hence to fight.

More Examples of Divergence

Specialisation in many directions can be exemplified in the descendants of the various forms of Indo-Germanic **dher-*, **dhr-*, **dhor-*, **dhrē-*, etc., to make a noise. With the addition of a formative element *-n* (giving Indo-Germanic **dhrēn-*, **dhrōn-*, etc.) we have the Germanic forms **dran-*, **drēn-*, etc., a bee, a drone (the insect being named from its sound), represented by O.H.G. *treno*, Old Saxon *dreno* and *drān*, O.E. *drān*, Mod. Eng. *drone* (note the further -figurative -development of *drone* in the sense of an idler). Germanic has also, however, a trace of the more general sense, in Gothic *drumfus*, a droning sound. This sense is uppermost in Sanskrit; cf. Skrt. *dhranati*, resounds. In Latin, the verb *drensāre* is limited to the cry of the swan. In Greek we have, on the one hand, the descriptive insect-names *thrōnax* (a dialectal form), *an-thrēne*, a drone, and *ten-thrēne*, a wasp; and, on the other hand, *thrēnos*, mournful song, dirge (cf. the borrowed English word *threnody*). Again, omitting the *-n* element, we have from the Indo-Germanic **dhr-*, **dher-*, etc., Germanic **dur-*, O.E. *dora*, humble-bee, and the modern *dor-beetle*, while Greek has, with a more general sense, *thoribos*, a confused noise, and in Lettish we find (with prefixes), on the one hand, (*dun*)*duris*, a drone, and, on the other, (*den*)*deris*, a whimpering child.

The word *dreary* and its Germanic relations offer an example of a figurative development of a concrete term. In O.E. *drēorig* (M.E. *drēri*) meant not only sad, but it had also the earlier senses of shedding tears, or (of tears, rain, etc.) falling, dripping; and the ultimate root seems to have been Indo-Germ. **dhrēus-*, **dhrōus-*, **dhrus-*, anything that drips or drops. Cf. also O.E. *drēosan*, to fall, drip, O.L.G. *driosan*. A more concrete and limited sense appears in Gothic *drausna*, piece, mouthful, Lettish *druska*, piece, crumb, and Lithuanian *druska*, salt.

Strange Derivations

Meanings sometimes develop in unexpected ways, and the same original base may acquire two senses apparently directly opposed to each

other. For instance, the English word *black*, which, through the Indo-Germanic form **bhlog-*, is related to Latin **flagma*, later *flamma*, flame, Greek *phlegēin*, to burn, *phlogmos*, blaze, *phlox*, earlier **phlogs*, flame (the flower *phlox* is named from its bright colour). The original sense of *black* is, then, "burnt, darkened by fire." Another more distantly related word is Eng. *bleach*, from the Old English verb *blæcan*, to whiten (cause to grow pale), from the (now obsolete) adjective *blāc*, shining, hence pale; the original sense was shining, glittering, glowing.

The names of colours not infrequently vary in sense in the different languages. Thus the word *blue* is a direct relation of Lat. *flāvus*, yellow, golden; *yellow* (O.E. *geolo*) is cognate with Gk. *khloros*, green, and Lithuanian *zelvas*, green. So also we find related words used for the names of different birds: cf. Gk. *ki-khlē*, thrush, *khelidōn*, swallow, and the last syllable of *nightingale* (O.E. *nihte-gale*, bird singing in the night), all derived from a base meaning to sing or cry. Similarly, Eng. *throstle* and *thrush* are cognate not only with Lat. *turdus*, thrush, but also with Gk. *strouthos*, sparrow, and *strūthōn*, ostrich (*ostrich* itself is from Old French *ostruche*, from Low Latin *avis strūthio*, the bird ostrich).

Connexion Traced

The historical connexion between *tiger* and *etiquette*, impossible as it seems, is worth tracing. *Etiquette* is borrowed from O. French *estiquete*, a ticket, label (something stuck on); this is actually borrowed from a Germanic language, and corresponds to the Old English verb *stician*, to stick, i.e. to be fixed, remain fastened, either by adhering, or by being pierced or pinned; this latest meaning is the earlier, as we can see from the corresponding nouns, O.E. *sticca*, stick, peg, Old High German *stih*, Gothic *stiks*, point, prick (cf. *stickleback*). The ancestral Indo-Germanic form was **stig-*, but occurred also without the initial *s*: **tig-*, both meaning sharp, pointed; the former appears also in Gk. *stig-ma*, mark made by a prick, scar; Lat. *in-stig-āre*, to prick with a goad, urge on (cf. *instigate*, which is borrowed from it); **tig* is found in Sanskrit *tigmaś*, pointed, and in Old Persian *tigra*, sharp; by a specialisation of meaning the latter also had the sense of "tiger," borrowed into English from the East.

Animal Nomenclature

Animals are often named from some habit or property; thus, Lat. *cer-vus*, stag, deer, means the horned animal; the same base appears in O.E. *heorot*, stag (Mod. Eng. *hart*); cf. with these Gk. *keras*, horn, and the related forms (Indo-Germ. has **ker* and **kor*, horn) in

Lat. *cornu*, horn, and Eng. *horn*. The English word *deer* is, as has already been pointed out, a specialised sense of O.E. *dēor*, an animal, which, with O.H.G. *tior*, O. Norse *diur*, Gothic *dius*, etc., all used for animal, have ultimately the sense of "a breathing or living thing"; the Indo-Germanic word **dhēws*, etc., from which they are all derived, meant breath, and also steam, vapour.

In the same way, *horse* (O.E. *hors*), with O.H.G. and O. Saxon *hros*, means the runner, and is related to Lat. *currere*, earlier **curserē*, to run. *Fox*, with O.H.G. *faha*, Gothic *fauhō*, is apparently cognate with Skrt. *pučcha*, tail, and is named from its brush.

Fowl, O.E. *fugol* (the usual word for bird in O.E.), with German and Dutch *vogel*, Gothic *fugls*, bird, are from **flugl-*, from a form **flug-*, ultimately the same as O.E. *flēogan*, to fly, whence comes the modern verb.

It is curious that the complete histories of the common words *dog*, *pig*, *sheep*, and *lamb* are unknown (the last two occur in other Germanic languages, but apparently no farther afield). *Cur* is named from the dog's growl; cf. O. Norse *kurra*, to grumble. *Camel* is from Hebrew *gāmāl*, related to an Arabian word meaning to carry, while *dromedary* is derived through French and Latin, from Greek *dromados* (nom. *dromas*), a runner; the base **drom-*, running, appears also in Gk. *dromos*, course, race-track, cf. Eng. *hippodrome*, from Gk. *hippodromos*, a track for horse-racing.

Original Forms

The word *cow* really means "that which feeds; the eating animal"; it represents O.E. *cu* (cf. German *kuh*); this, also an Old Slavonic word *gov-ēdo*, ox, and Irish *bō*, cow, are from an original form **gwōu*, cow, ox, etc., whence also come Gk. *bous*, Lat. *bōs*, ox (cf. *bovine*), and Skrt. *gāu*, ox (the last occurs in *nilghau*, the name of an Indian antelope, meaning blue ox). But **gwōu* also meant to feed, and from it is also derived Greek *boskein*, to feed cattle; the corresponding adjective *botanikos* meant first "relating to pasture or fodder," but later more generally "relating to herbs"; from this came French *botanique*, whence English *botany*.

The words *serpent* and *snake* both mean the creeping thing, the former (of Latin origin) being connected with Lat. *serpere*, to crawl (cf. Skrt. *sarpati*, he crawls, and *sarpas*, serpent), the latter with O.H.G. *snahhan*, to creep. *Worm*, with O.H.G. *wurm*, Gothic *waurms*, O. Norse *ormr*, and Lat. *vermis*, earlier **vormis*, comes from an original **wer-*, **wr-*, meaning to twist, turn, which appears also in a large number of other words, including *wrench*, *wring*, *wrest*, *wrong*, *worry*.

LESSON 8

Foreign Words in the English Vocabulary

THERE can be few languages, except among the most remote and primitive communities, which do not possess as part of their vocabulary some proportion of words from other languages. Such loan-words must, of course, be distinguished from words inherited from an ancestor. It would be incorrect, for instance, to speak of Latin loan-words in French, except in the case of some learned words: French is Latin in origin, being directly derived from it, not merely adopting words from it.

The number of loan-words in English is remarkably large, probably larger than the number in any other European tongue; some of these others, indeed— for example, German and to a certain extent the Scandinavian languages—definitely avoid foreign words, and prefer instead to make up their own somewhat clumsy compounds, e.g. Norwegian *fiernsynsmottaker* ("far seeing's from-taker") for English *television* (from Greek and Latin), *receiver* (from Latin). Throughout the whole course of its history English has steadily continued to absorb one word after another, one group of words after another, from any language with which it came into contact. Although this has sometimes meant that a good native word was replaced and ultimately lost, it has also very considerably increased the size and richness of the vocabulary.

The introduction of foreign words may be due to direct contact between speakers of two languages, or it may be due to the influence of literature. On the whole, words belonging to the former group are usually of the more popular, ordinary type, those of the latter usually of a more learned type. The fact of words being borrowed in very large numbers from a certain foreign language at a certain period usually points to a corresponding period of bilingualism, during which both languages are spoken, and words from each incorporated into the other. As will be seen later, there have been in English two very striking periods of borrowing of this kind: the Scandinavian domination of parts of England just before the Norman Conquest, and the Norman-French domination after it.

Changes in Pronunciation

Loan-words are not always, one might almost say not often, adopted in exactly their original form. Frequently the precise sounds of the borrowed word do not actually exist in the borrowing language, and the sounds most nearly corresponding are substituted. In this way the loans become part and parcel of the

ordinary speech of the country or community, and develop subsequently in exactly the same way as the native words. Sometimes certain of the native speakers are able to pronounce the foreign sounds, and habitually use them in the borrowed words, while others do not, and in these circumstances two forms may arise. This happened in the case of words like *launch*, *laundry*, which now have either the vowel of *father* or the vowel of *caw*; the distinction goes back to the 13th century, when some speakers pronounced such words with the ordinary English *an*, others with the French nasal vowel, *ā*. Sometimes a word will not be fully naturalised for a considerable period, but may be pronounced as a kind of compromise between the foreign and native pronunciations. We may instance the word *garage*, which is pronounced with an English first vowel instead of the French one, and with the stress on the first syllable, but has not yet, at least among speakers of Standard English, been fully anglicised to *garredge*.

Loans from Latin

The language which we know as West Germanic, from which English, Dutch, German and Frisian all developed, and which was spoken approximately in what is now Holland, south Denmark, and north-west Germany, borrowed words from Latin at least as early as the 3rd century of this era, and most of these words are preserved in the individual West Germanic dialects. Most of them are military terms or words denoting ideas or objects of trade which the Germanic peoples learnt to know first through the Roman soldiers, officials, and merchants. Thus we have in Mod. Eng. *street*, Old Eng. *stræt*, from Latin *strāta* (*via*), paved road; O.E. *port*, gate, haven, Lat. *portus*; O.E. *mil*, mile, Lat. *mīlia* (for *mīlia passuum*, a thousand paces); O.E. *ceaster*, city, Lat. *castra*; O.E. *cāser*, emperor, Lat. *caesar*; further, commercial terms and objects, such as O.E. *disc*, dish, Lat. *discus*; *pise*, pea, Lat. *pisum*; *pipor*, pepper, Lat. *piper*; *gimm*, jewel, Lat. *gemma* (the Mod. Eng. *gem* is, however, a later borrowing from French; O.E. *gimm* would have become *yim*); *mynet*, coin, money (Mod. Eng. *mint*), Lat. *monēta*; O.E. *win*, wine, Lat. *vinum*; O.E. *pund*, pound, Lat. *pondo*. A few ecclesiastical terms also date from this period, though they cannot be among the very earliest loans and were probably learnt while the ancestors of the English were still pagan; so we have O.E. *biscop*, bishop, Lat. *episcopus*; *regol*, monastic

rule, Lat. *regula*. At the same time a few words were learnt from Greek, though through the medium of Latin; O.E. *engel*, angel, Lat. *angelus*, from Greek *aggelos*; O.E. *dēofol*, devil, Lat. *diabolus*, from Gk. *diabolos*; and O.E. *circe*, church, from Gk. *kuriakon*.

Religious and Trade Terms

More words were adopted from Latin, chiefly through continental intercourse, after the settlement of the English in this country. Many of these, especially those learnt after the introduction of Christianity in the early 7th century, are religious terms, but the names of common objects of trade, etc., are by no means infrequent. Belonging to this period we have, for instance: O.E. *pāpa*, pope, *arc*, chest, ark, *fals*, false, *mynster*, monastery, *font*, font, *domne*, lord, from the Latin words *pāpa*, *arca*, *falsus*, *monasterium*, *fons* (gen. *fontis*), *dominus*, beside *torr*, tower, *copor*, copper, *segn*, banner, *oele*, oil, *fefor*, fever, *cycen*, kitchen, *mülen*, mill, from the Latin words *turris*, *cuprum*, *signum*, *oleum*, *febris*, *coquina*, *molina*.

There is also a considerable number of words borrowed from Latin, which, though used freely in the religious writings of the 8th to the 10th centuries, probably did not penetrate into colloquial speech; such are O.E. *apostol*, *epistola*, *psalm* or *salm*, *martyr*, *tempt*, *sanct*, *sacred* (priest).

Celtic and Scandinavian Words

During their continental period, before they came to England, and also after their settlement in this country, the English people adopted a number of words from Celtic. A very early loan is certainly to be found in O.E. *rice*, a kingdom, and adjective *rice*, powerful, from a Celtic form *rik-*, a king; this survives in the suffix of *bishopric* (in the sense of jurisdiction), and the meaning has partly influenced Middle English *rich*, from Old French *riche* (itself a loan-word from Germanic, and thus from the same source as the Old English word). The verb *ride*, the noun *wire*, and perhaps also the metal-name *lead*, are to be referred to the pre-settlement period. From the Britons in this country the English adopted *assa*, ass, *brocc*, badger (now only provincial), *dūn*, hill (Mod. Eng. *down*), *dry*, magician (cf. the later *druid*, which is of the same Celtic origin, but through French from a Latin form of the Celtic word), and two or three others which have not survived. The word *cross* (n.) may have come directly from Celtic (Irish), or from Celtic by way of Old Norse.

Apart from Latin loan-words the most important additions to the vocabulary before the Conquest were from Scandinavian—Norse and Danish. Most of these are recorded in writing

first in the post-Conquest period, but large numbers of them must have reached this country earlier, during the Danish invasions of the 10th century, and still more during the period of Scandinavian settlement in the 11th century, when in certain parts of the country, notably the north-west, north-east, and east Midlands, the Danes and Norsemen lived side by side with and intermarried with the English, and when bilingualism certainly existed for some time over a considerable area.

Some of the earliest Scandinavian forms to be recorded in English are names of kinds of boats, titles of rank, and similar distinctive words (e.g. *barda*, beaked ship, *cneor*, small warship, *hūscarl*, member of the king's bodyguard, etc.), but we find also such commonplace words as *call* (first in the poem known as "The Battle of Maldon," 991), *take*, and *law*. It is interesting to note that only these more ordinary words survive in Middle English from those early loans.

After the Norman Conquest

After the Conquest, when records become more numerous, Scandinavian words are found in great numbers, and include such as *sister*, *husband*, *fellow*; *sky*, *skin*, *egg*, *bull*, *wing*; *meek*, *low*; *both*; *though*. Further, we even have the Scandinavian pronouns *they*, *their*, *them* (Scand. *þeir*, *þeirra*, *þeim*) replacing the English plural pronouns (O.E. *hie*, *heora*, *him*), first in the north-east, and then by a gradual drift in the south-east, and finally in the west.

Since both Old English and Scandinavian are ultimately derived from the same original form (which we call Primitive Germanic), the two languages had very many words in common, some of which are only slightly differentiated, while others are the same in both. In the latter instance, it is impossible to say from which language a specific Middle English form arose. But it is usually easy to distinguish the two; thus Mod. Eng. *swain* is certainly from Old Norse *sveinn*, and not from the corresponding O.E. *swān* (which would have become Mod. *swone*), *kettle* is O. Norse *ketill*, not O.E. *cetel* (which would now have been *chettle*). In many instances the actual Scandinavian dialects from which the borrowed forms are derived can be distinguished (e.g. Danish, Norwegian, Swedish).

Sometimes an Old English form remains, but acquires the (slightly different or specialised) sense of the Scandinavian equivalent. Thus O.E. *drēam* meant song, music, joy; but in Middle English the word *dream* is used (as now) with the meaning of the corresponding Scand. *draumr*, vision. So also Mod. Eng. *earl* represents O.E. *eorl*, man, hero, warrior, but acquired in Middle English something of the significance of Scand. *jarl*, a title of honour and also of office,

Two verbal suffixes which, though occurring in Old English, are far more frequent in Middle English, and appear to be mainly due to Scandinavian influence, are (a) the inchoative (i.e. indicating the beginning or development of an action or quality) suffix *-en*, e.g. in *darken*, *fasten*, *quicken*, *gladden*, *lengthen*, *weaken*, *slacken*, *listen*, etc., and (b) the frequentative suffix *-le*, as in *dabble*, *dangle*, *bustle*, *babble*, *wobble*, *gabble*, *waggle*, *drizzle*, etc.

Origin of Anglo-French

During the 11th century England was in close contact with that part of France which was nearest it geographically, Normandy in the north-west; and the association became even more intimate when William, Duke of Normandy, was crowned king of England in 1066. The social, political, and religious systems of Normandy at this time were more elaborate and developed than those of England; and this, added to the fact that the Normans were the ruling class, caused a rapid spread of French ideas, customs, and so on, over the greater part of England. These new ideas, as well as new objects of trade, brought with them French words to represent them. But at the same time we find also French words replacing Old English ones, and this becomes more and more marked during the passing of the 13th and 14th centuries, when French and English speakers were living a common life and French forms being constantly used in English by bilingual speakers. During this period also Norman French developed a distinct dialect in this country, known as Anglo-French, and a considerable amount of literature written in this dialect still survives.

First-comers from France

Very few Norman-French words are recorded in English before the end of the 11th century. Those that do occur—for instance, in that version of the Anglo-Saxon Chronicle which was continued at Peterborough after the Norman Conquest—include several place-names, such as *Bataille* (now Battle, the name given to the scene of the battle of Hastings) and *Malveisin*, a French name given to a castle built near Bamborough, and meaning in English, as explained in the Chronicle, "evil neighbour"; we find also the foreign word *Nativitet* for the Feast of the Nativity, and, of common nouns, *cancelere* (= chancellor) and *tur*, tower (referring to the Tower of London). From the end of the first quarter of the 12th century, from which date till 1154 additions were made to the Chronicle at various times, we find further military and legal terms, such as (to give their modern forms) *war*, *prison*, *accord*, *council*, *justice*, *peace*, *treasure*, *court*; a few religious terms, such as *charity*, *procession*, and a few titles: *countess*, *duke*, *empress*.

Documents from the end of the 12th century are very largely religious in character, and, to begin with, French words are very rare; we have among the earliest in this type of literature *sot* (= fool), *seived*; and in slightly later texts, *feeble*, *grace*, *passion*, *poverty*, *gluttony*, *orisons*, etc., as well as more definitely learned words derived from ecclesiastical literature: *synagogue*, *archangel*, *prophet*, *sacrament*, *patriarch*. The deservedly famous prose book known as the *Ancren Riwele*, or Rule of Anchoresses, written probably before 1200 but surviving only in manuscripts not less than a quarter of a century later, has a considerable proportion of Norman-French words, both ecclesiastical and secular and of both popular and learned character; to mention a few: *hypocrisy*, *obedience*, *blasphemy*, *salvation*, *prelate*, *sermon*, *service*, *sire*, *dame*, *champion*, *robber*, *noise*, *traitor*, *assault*, *master*, *debt*.

Central French Dialect

There are two manuscripts of a long epic poem written about 1200—a chronicle of Britain, known as the "Brut" from the name of the first hero of the poem, the Trojan Brutus—the first apparently a contemporary copy, the second a shortened version of about fifty years later. In the second of these it is interesting to observe that in a number of instances French words are substituted for the English words of the earlier version: *pais* (= peace) for the O.E. *frio*; *cry* for *weop* (= weeping); *chieftain* for *heretoga*; *purses* for *haiges* (= O.E. *hæagas*, rings, money); and so on.

So far only the influence of Norman French upon the English vocabulary has been considered, but during the later 13th and 14th centuries many words were introduced from another French dialect, known as Central French. These words can often be distinguished from the more northerly forms borrowed earlier, by their vowel or consonant sounds. It happens not infrequently that two words survive in Modern English, one of which comes from Norman French, the other from Central French, differentiated in meaning in English, but ultimately identical. Thus we have *catch* (N.Fr.) and *chase* (C.Fr.), *launch* and *lance*, *wage* and *gage*, etc.

On the whole, French words borrowed between 1050 and 1450 fall into such categories as ecclesiastical, military, and legal terms, titles, names of relationships (other than the immediate members of a family), words denoting dress and armour, food and drink, literary and artistic terms, games and dancing, indicating very clearly in what ways England came most under the influence of French culture.

The end of the 14th century is the beginning of the Renaissance period of western European culture, with the revival of interest in the

classical literatures, and their intensive study in England as well as other countries. This brought a large number of Greek and even more Latin words into literature, and through literature many of them penetrated to the colloquial language. The wave of classical influence was still felt as late as the 17th century, though Milton's style, highly charged as it is with classical words and meanings, is very individualistic and not typical of his time.

Some Varied Borrowings

Meanwhile other countries in Europe and elsewhere were beginning to contribute to the English vocabulary. Words from Arabic, though coming through French or Spanish, were introduced as early as the 14th century, such terms as *alchemy*, *alembic*, *cipher*, *nadir*, *zenith*, indicating the Arabian interest in science. During recent times Greek has contributed the greater part of the new English scientific vocabulary. Italy, among the leaders of the Renaissance movement, was the source of a stream of words dealing with music, art, and literature, and even now real Italian, unanglicised words are often used in connexion with such work. Among the most ordinary Italian words are *piano*, *opera*, *solo*, *finale*, *stanza*, *canto*, and even *umbrella*. The artistic activity of the Netherlands also supplied terms of art, such as *casel*, *landscape*, *mantstick*; from Holland also came nautical terms: *yacht*, *schooner*, *boom*, *dock*, etc. German loans are chiefly scientific, such as *zinc*, *quartz*, *cobalt*. From Spain came *negro*, *port*, *sherry*, *renegade*, *armada*, and a number of military words. From western Asia (e.g. Persian, Turkish) English has adopted chiefly the names of objects of trade, plants, etc., such as *turban*, *tulip*, *sugar*, *coffee*, and animals, as *tiger* and *camel*. Words from Hindustani are mostly of fairly recent introduction (18th century or later). *Calico* is from the Indian place-name, Calicut. *Tea* is Chinese, *kimono* Japanese. *Quagga* and *zebra* are African. Australia supplies *kangaroo*, *wallaby*, *dingo*, *boomerang*, and other distinctive native names.

The borrowing of words from the Americans began at the time of the discovery of that

continent in the 15th century, and has continued ever since. The first loans were for the most part native Indian names of plants, etc., e.g. *tobacco*, *banana*, *chocolate*, *jaguar*, *puma*. Of recent years the borrowings have been chiefly from the United States, and consist partly of foreign words (e.g. German) used in American English, and partly of English words used in distinctive senses which developed first in America, often as slang terms.

Invented Words

The tremendous developments of science in the 19th and 20th centuries necessitated the invention of many words to describe new discoveries, chemical compounds, processes of manufacture, etc. Generally speaking, these invented words were made from Latin or Greek roots on correct philological principles, e.g. *telegraph* (from Gk. *tele*, far, and *graphein*, to write), *telephone* (from *tele* and Gk. *phone*, voice), *antibiotic* (from Gk. *anti*, against, and *bios*, life). But occasionally Latin and Greek were carelessly mixed, as in *television* (from Gk. *tele* and Lat. *visio*, from *videre*, to see). Another mixture is the word *vitamin*, invented in the 1920s to describe what the discoverer of vitamins called "an accessory food factor." This was made from Lat. *vita*, life, and the existing chemical term *amine* (a compound derived from *ammonia*); *ammonia* itself had been named from a gum known to the ancient Greeks as *ammoniakon* because it was said to come from a plant growing near the temple in Libya of the Ethiopian god Ammon (Egyptian Amen-ra), whom the Greeks equated with Jupiter.

As well as by inventing words scientists and other learned writers have enriched English with new forms of ancient words which they have adopted for special purposes. A good example is the Mod. Eng. word *cycle*. This came from Gk. *kuklos*, the Indo-Germanic ancestor of which was **kwekwlos*; but by the Germanic line of descent this had become **hwehwulos*, from which came O.E. *hweogol* or *hweol* and Mod. Eng. *wheel*. Thus *cycle* and *wheel* are in ancestry the same word, used today with different meanings, the one learned and figurative, the other common and literal.

LESSON 9

Names and Surnames

IN modern times personal names consist of a surname and a first or christian name. It is now often the practice to give a child two christian names or even more (examples have been quoted of people having over twenty names), but this has been commonly the case

only during the last century and a half approximately. In the England of the pre-Conquest period it was very rare for any person to have more than one name, and hereditary surnames did not exist. The Anglo-Saxons inherited their method of name-giving and name-formation

from the Indo-Germanic-speaking peoples from whom they derived their language, and the same method was in use in early times among the speakers of other Indo-Germanic dialects.

Greek Names

Greek names are typical of the names of the whole Indo-Germanic family at an early period. The normal Greek personal name consists of two elements which express the hopes and expectations of the parents in naming the child, and so have meanings of good omen - fame, honour, power, piety, and so on. Sometimes the two elements together form a complete, united idea. Such names are *Herodotus*, gift of the goddess Hera ; *Pericles*, exceedingly famous ; *Hippocles*, famed through a horse, or horsemanship ; *Diogenes*, divinely born ; *Polycrates*, having great strength ; *Heracles*, having fame through Hera. Many Greek names are formed with such elements as *stratos*, an army ; *makhē*, battle ; *polemos*, war ; *arkhōn*, leader, ruler ; and animal names such as *lukos*, wolf ; *leōn*, lion.

But the two elements of the name are not always significant in combination. For one thing the custom arose of giving a child a name composed of one element from his father's (or grandfather's) name, and one from his mother's, and these resulted in meaningless compounds. One writer says he wished to name his son *Pheidōnides*, after the child's grandfather, but his wife wanted it called by a name containing the element *hippos*, horse, such as *Kallippides* or *Xanthippos* ; so they compromised on a blend, *Pheidippides*, literally thrift-horse, which obviously makes no sense.

In addition to these full-names, of two elements, there are also in Greek shortened forms of them, used as colloquial names or pet-names, first in the immediate family, but often extended to wider circles. So *Zeuxis* appears for *Zeuxippos*, *Amphis* for *Amphiaros*, etc. More rarely the second element is retained ; *Dika* for *Mnasidika*, etc.

Thirdly, there are one-element names originating in descriptive epithets or nicknames, such as *Strabōn*, squint-eyed ; *Simos*, *Simakos*, snub-nosed ; *Kullos*, crooked. Most of the names of this type are of an uncomplimentary character.

Early English Names

Very similar conditions obtained in England in the period between the Anglo-Saxon Settlement (5th century) and the Norman Conquest ; but here significant compounds are the exception. The elements are joined together without thought for suitability of meaning. The significance of the individual elements resembles that of the words used in Greek—words of favourable omen, expressing strength, courage, and good fortune. There are, for instance, names

containing the word *bald* (or *beald*), bold, either as first or as second element ; *Baldwine* (wine = friend), *Baldheard* (heard = strong), *Baldhelm* (helm = helmet), *Baldrēd* (rēd = counsel), *Cynebeald* (royal + bold), *Cūthbald* (famous + bold), *Dægbeald* (day + bold), *Frithubald* (peace + bold), and others.

Words for war, such as *beadu*, *hild*, *gūth*, and victory, such as *sige*, are common in the names of this period : *Beaduhild* (war + war), *Beadufrith* (war + peace), *Beaduwine* (war + friend), *Hildiberht* (war + famous), *Hildwine*, *Frithhild*, *Guthhere*, *Sigeberht*, *Sigebeald*, *Sighelm*, *Beorhtsig*, etc. Names indicating ruler or authority : *Waldfrith*, *Waldhelm*, *Cynewald*, *Æscweald* (æsc = spear), *Ricberht*, *Æthelric* (æthel = noble), *Frithwic*, *Hereic* (here = army). Names of animals, etc. : *Wulfgār* (gār = spear), *Æthelwulf*, *Æscwulf*, *Sigewulf*, *Earnwulf* (earn = eagle), *Eoforwulf* (eofor = boar), *Wurmhere* (wurm = dragon). Names of buildings, etc. : *burg*, a fortified town, in *Hildeburg*, *Ealdburg*, *Cyneburg*, *Æthelburg*, *Bughelm*, *Bugheard* ; *ealh*, temple, in *Ealhhelm*, *Ealhfrithu*, etc. ; *geard*, enclosure, dwelling, in *Frithugeard*, *Æthelgeard*, etc. These form only a very small selection ; the number of elements and the various combinations thereof is enormous.

As in Greek, there are names consisting of a single element ; these are usually, as already indicated, colloquial or pet names abbreviated from the double forms : *Deora*, *Beorna*, *Hilde* (fem.), *Beorht*, *Lufa*, etc., and also such names as *Dodda*, *Putta*, *Tutta*, *Rudda*, *Hidda*, *Witta*, *Acca*, *Glappa*, though the etymology of some names of this type is not clear.

Chains of Names

It was the custom in the Anglo-Saxon period for one element to remain constant through successive generations. Thus a man named *Æthelwulf* might have a son called *Æthelhere*, a grandson *Æthelhelm*, a great-grandson *Æthelstān*, and so on ; or there might be in succession *Wulfhere*, *Sigehere*, *Cynehere*, etc. Or the relation may be expressed by alliteration, that is to say, a chain of names each beginning with the same consonant or with the same or a different vowel, e.g. *Bealdwine*, *Beornhere*, *Beorhtwulf*, or *Healfdene*, *Heorogār*, *Hrōthgār*, *Hālga*. The last three (historical characters) were the sons of Healfdene ; in the next generation occur Heoroweard, Hrēthric, Hrōthmund, Hrōthulf.

Additional names are found occasionally in Old English, but these are always descriptive of an individual, and not hereditary. Bede mentions a princess *Æthelburg* "who was also called *Tata*," and the Anglo-Saxon Chronicle refers to a certain *Ælfhēah* who was also known as Godwine. Sometimes these added names are descriptive of personal characteristics : *Æthelric Ealda* (the old), *Brihtric Grim* (the fierce) ;

Æthelred the White, Wulfhun the Black; sometimes they indicate occupation: *Briech Munuc* (the monk); sometimes ancestry: *Fin Godwulfing* (son of Godwulf), *Godwulf Gēating* (son of Gēat).

Origin of Surnames

After the Conquest the proportion of additional names becomes larger. One writer on the subject, working on certain documentary records compiled between 1066 and 1100, calculated that out of five or six thousand names examined, about 40 per cent. have additional names. This includes persons of all ranks. The second names may be roughly divided into (a) local names or addresses (e.g. *Willelmus Flandrensis*, of Flanders, *Radulphus de circella*, of Churchill); (b) names indicating relationships (e.g. *Almarus frater Stigandi*, brother of Stigand, *Ælric Meriete*, son of M., *Godwinus Tokeson*, or simply *Radulphus Pipin*, etc.); (c) characteristic names (e.g. *Edric Lang*, tall, *Aluric Petit*, *Gislebert cum barba*, with the beard; (d) names of occupation (e.g. *Grimbald aurifaber*, goldsmith, *Hugo Diaconus*, the deacon, *Hugo pincerna*, the butler, *Gomanus homo Edie*, the servant of Edive, *Theobald thegn*, the thane). These additional names, as the examples given imply, may be in English, Latin, or French.

Use of Two Names

During the 12th and 13th centuries the custom of using two names increases. It is probable that the increase is due rather to official requirements than to actual personal usage; as the number and elaborateness of written official documents grew, the scribes must have found it more and more necessary to have some means of distinguishing between individuals of the same name (e.g. between the many Hugos and Williams and Godwins and Godfreys and Ralphs that fill their pages). By the end of the 13th century virtually every person mentioned in official records has two names, the proportion of address names has increased, and so has that of purely English names.

It seems that surnames in the sense of *hereditary* family names were first officially recognized towards the end of the 13th century, and the custom of using such names spread fairly rapidly all over the country, and among all classes of the people (though more rapidly, perhaps, among the upper classes than the lower), until in the 15th century more than 75 per cent. of the whole population had fixed, hereditary names. A very large proportion of the 15th-century names survive into modern times. Of course, in many cases the same name is used by several different families; sometimes there is a slight difference in spelling—usually quite meaningless, and depending solely on the fluctuations of 14th century orthography.

The classification of modern surnames can be given here only in very rough outline. The main categories are: local, genealogical, occupational, descriptive.

1. **Local Surnames.** The first class is probably the largest. It comprises names indicating a person's place of residence or origin, or place of work. Sometimes they are quite vague, and in the case of foreigners simply show the country of origin, e.g. *Lombard*, *Spain*, *Dane*, *Frank*, *Loring* (of Lorraine), or, similarly, *Ireland*, *Welsh*; or they may be the name of a county: *Wiltshire*, *Shropshire*, etc.

Again, they may be the name of a town or village (*Holford*, *Ludlow*, *Buxton*, *Craven*, *Clifton*, *Whiteley*, etc.); or from the name of a single local feature (*Wood*, *Bridge(s)*, *Holt*, *Ford*, *Lee*, *Leigh*, etc.); of a building as the place of occupation (*Spence*, *Abbey*, *Chappell*, *Hall*); or from a shop or tavern sign (*Bull*, *Wolf*, *Raven*, *Lamb*, etc.).

2. **Relationship Names.** Names of relationship include some of the most frequently occurring surnames (e.g. *Jones*, *Williams*, *Johnson*). They may be derived from the personal name of the father or the mother, more rarely of some other relative, e.g. *Johnson*, *Robertson*, *Tillotson* (*Matilda's* son), or from the additional name of one of these, e.g. *Cookson*, *Shepardson*. Sometimes the name of the relative is used as the surname without any inflexional or other suffix: e.g. *John*, or *Henry*, but there is frequently a possessive suffix—*s*: *Jones*, *Hughes*, *Rogers*, and *Evans*.

Prefixes indicating "son of" have been borrowed from other languages, e.g. the Norman *fitz*, the Scottish *mac*, the Irish *mac* and *O'*, and the Welsh *ap* (often appearing as *p* or *b*, as in *Parry*=*ap* *Harry*, *Pritchard*=*ap* *Richard*, *Bevan*=*ap* *Evan*.)

3. **Occupation Names.** Names of occupation are very common and very varied. They may indicate an official position, e.g. *Chamberlain*, *Clark*, *Constable*, *Squire*, *Sherriff*, *Marshall*, etc.; or a trade or profession, as *Kemp* (soldier), *Fletcher* (arrow-maker, from Fr. *flèche*, arrow), *Archer*, *Spooner*, *Drap(i)er*, *Baxter* (baker), *Smith*, *Butler*, *Webber* (weaver), *Cooper*, *Lockyer*, etc.

Most of these have the agent-suffix *-er*, but other suffixes may be seen in *Shepherd*, *Ire-* or *Ironmonger*, *Goldsmith*, *Shoemaker*, *Chapman*, *Plowman*, *Bowman*, *Priestman* (priest's servant), *Arkwright*, *Wainwright*, etc. A few names such as *King*, *Prince*, *Bishop*, have been explained as nicknames referring to the characters in the annual medieval miracle or mystery plays represented by the individuals to whom the names were assigned.

4. Descriptive Names. Other surnames are descriptive of personal appearance, quality, habit, etc. Under this heading come such names as Reade (red), White, Black, Petty (little), Gross (big), Fairfax (fair hair), Colefax (dark hair), Russell (red), Longshanks (cf. the Scottish-English Cruikshanks), Tallboy, Broadhead, Armstrong. These are all surviving examples, but between the 13th and 15th centuries there are more picturesque names, now gone out of use; such as Fathead, Flaxenhead, Fairarmful, Sweetmouth, Cherry-cheek. A name might be given from some possession, garment, etc., e.g. Longstaff,

or the medieval Silverspoon, Greenkirtle.

Names indicating the object of a man's trade belong partly here, partly in the previous class. These are probably less common now than formerly. Medieval examples are Codfish, Cheesandbread, Barleybread, Honeypot, Blancmange. Phrase-names survive to some extent; such are Drinkwater, Makepeace, Doolittle, Scattergood, Wagstaff, Shakespeare, Lickfinger. A miscellaneous collection of nicknames might include such oddities at Twopence, Snowball, Hornpipe. Names taken from natural objects, animals, etc., are (some only medieval) Haycock, Peasecod, Honeydew, Churchmouse, Pusscat.

LESSON 10

Etymology of Place-names

THE etymology or ultimate meaning of the names of places in this and other countries has during the last fifty or sixty years engaged much attention. The English Place-Name Society has provided for the proper scientific study of the history of the names in all the counties of England, and for the publication of the survey. The director of the survey, with the help of other scholars, had (up to 1957) published volumes on the names in Buckinghamshire, Bedfordshire, Cambridgeshire, Huntingdonshire, Nottinghamshire, Worcestershire, Yorkshire (North and East Riding), Sussex, Devon, Northamptonshire, Surrey, Essex, Warwickshire, Hertfordshire, Wiltshire, Middlesex, Oxfordshire, and Cumberland.

False Etymology

The majority of the English place-names have been in existence since the Norman Conquest, and some of them are recorded far earlier than this. We are fortunate in England in having an unsurpassed collection of documents from the end of the 7th century, coming from all parts of the country, and containing contemporary forms of place-names.

False etymology is at its worst in place-names. Except in a minority of cases it is useless to guess the meaning of a name without knowing what form or forms it took in earlier periods -- the earlier the better; given, say, a 10th- or 11th-century form, interpretation is probably impossible except to those who have some knowledge of the language of the period, and of the sound changes which have intervened between that time and the present day. For place-names consist of or are compounded of ordinary words and personal names, and, with certain tendencies emphasised, develop similarly.

In order to interpret any single name, it is necessary to have (1) all the available (dated)

forms from the earliest records; (2) a knowledge of the topography of the place; (3) in many cases, a knowledge of similar names elsewhere, and *their* early forms.

Old English Place-names

Some place-names, however, are easy of interpretation (and it may be said that the primary meaning of most names is quite dull and unromantic). They consist of two elements, the second descriptive of the place, such as (to give the modern forms) *-ham*, homestead; *-ton*, farm; *-port*, town; *-hill*; *-bury*, fortified place; *wick* or *wich*, dwelling-place; *-ley*, clearing; *-field*, and so on. The first element consists of either a personal name, e.g. Brighton, Old English *Brīhtelmestūn*, "Brīthelm's farm or estate"; Badby, O.E. *Baddanby*, Badda's farm; Blisworth (12th cent.), *Blithesworth*, Blithe's enclosure; or of a significant word (noun or adjective) qualifying or limiting the second element, e.g. Preston, O.E. *prēosttūn*, priest's farm; Calverley, O.E. *calfra lēah*, calves' field or clearing; Barton, O.E. *beretūn*, barley farm; Higham, O.E. *hēah hām*, high homestead; Caldicott, O.E. *caldecota*, cold cottage; Radcliffe, O.E. *readclif*, red cliff. It will be noticed that the O.E. forms often have a very different appearance from the modern forms. An example of the misleading look which modern names sometimes have is the Northamptonshire Heathencote, which is shown by its early forms to have nothing to do with heathens, but to mean "Hēahmund's cottage" (Hēahmund being a common O.E. personal name). Sheepstor, in Devon, is really O.E. *scyttelstor*, "tor shaped like a bolt," and Luckless Cottage has developed from earlier *Luveclives*, from the personal name *de Luveclife* (O.E. *Lēofanclif*, Lēofa's hillside).

Although, on the whole, when there is a good supply of early forms, names usually yield up

their meaning, the history of some still remains insoluble. Even some which seem to be obviously English have not yet been interpreted, and others, which may be Celtic, or even pre-Celtic, are as difficult or more difficult to solve.

It sometimes happens that there are no early forms of a place-name extant, though it may have all the appearance of an old construction: in this case one can only be guided by one's knowledge of similar names, with recorded histories, in other districts. There are, of course, quite modern places - new suburbs and the like—whose names have little or no history, unless they are named from an old estate or district on the same site.

Evidential Value

The investigation of place-names, besides being interesting in itself, is of great value in connexion with other studies. Linguistically, it throws light on the earlier vocabulary of different parts of the country, and words quite frequently occur in the records as place-name elements (showing that they were actually in ordinary use) long before they are recorded in literature; other words are found only as place-name elements, but their existence in English is by this means established, and light is often thrown on their meaning by foreign cognates. Thus Upper and Lower Slaughter, in Gloucestershire, are represented in Old English by the form *slohtre*, which must be related to Low German *stochter*, a ditch (found also in Continental place-names), and the occurrence of the name *slohtre* in an 8th-century charter shows that the word was current at this early date.

Further, early forms of place-names help to show the pronunciation of the different dialects of English at different periods, since in the spelling of local records forms following the local pronunciation were used. Evidence is also afforded by earliest English place-names with regard to the Anglo-Saxon settlements, and on the social conditions and customs prevailing before the 9th century.

Celtic Survivals

Of the various languages represented in the place-names of England the earliest element is the Celtic. (A few names at present uninterpreted may be pre-Celtic, but there are no means of ascertaining their original form or of explaining them.) When the English came over from the Continent, and swept across the country in their earlier raids, or fought their way through it later in slower and more thorough methods of conquest, they destroyed numerous British villages and towns; their own homesteads and settlements were usually built on different sites and were given new names. But they not infrequently adopted

from the Britons the names of permanent features of the country, such as hills and rivers; many of these persist, and are found in almost all parts.

River Names

Among the Celtic river-names may be mentioned Trent, Thames, Avon, Usk (Exe-Esk, etc.), Wye, Ouse, Dove, Dee, Derwent, Frome, Kennet, etc.; of hills, often preserved in names of places lying on or near them, Bre(don), Brill, (Long)mynd, Clun, Creech (Crich, etc.), Penn; of forests, sometimes now village names, Kinver, Chet(wode), Culcheth, Berk(shire), Lyme (Staffs), Morfe (Salop), possibly Chiltern; of districts, or former provinces, Kent, Thanet, Lindsey, Kesteven, Leeds, and some counties, e.g. Devon, Corn(wall), Cumber(land).

The names of some of the more important British or Romano-British town-sites have also been preserved, often with an English ending added; such are London, Lympne, Dover, Rich(borough), Win(chester), Salis(bury), Lich(field), Dun(wich), York, Man(chester), Carlisle, Catterick, Lincoln, Cirencester).

It should be noted that the great number of English place-names ending in *-chester*, *-cester*, etc., an element ultimately derived from Lat. *castra*, camp, did not have this word as part of their names in Roman times: it was a word used by the English (probably borrowed on the Continent) to denote a stone-built or walled city, and was applied by them, either independently, e.g. Chester, or added to another, earlier, element, e.g. Manchester, to any existing, even if ruined, place of this kind.

Survival of British

The persistence of many of the Celtic names of natural features as well as of places was probably supported by the survival in parts of the country of a considerable number of the British as a definite element in the population. It now seems clear that the Britons were not exterminated, or not all driven into the remote west, by the advancing English. One piece of evidence which points to this survival is the frequency of names containing the element *Wal-* (O.E. *Walh*, a foreigner), or more rarely, *Bret-*, a Briton, such as the many Walcots, Waltons, etc., or the occasional (northern) Bretby.

Not all of the Celtic names existing to-day, especially those on the Welsh border, are necessarily of pre-Anglo-Saxon origin, since in some areas the British speech survived. Celtic names are naturally most common in the west (even without taking Cornwall and Monmouth into account, since these are practically all Celtic), particularly in Hereford, Shropshire, Cumberland, and, to a less extent, Lancashire.

But Devon has surprisingly few Celtic names (apparently fewer than Dorset or Somerset), actually less than one per cent. of the whole number of names being British, and these are scattered over all parts of the county, not concentrated on the Cornish border.

Latin in Place-names

The story of the Latin element in English names is partly bound up with that of the Celtic element, for this reason: whereas some of the Latin words used by the English in place-names were borrowed by them while still on the Continent (e.g. *chester*, *street*), others were borrowed through the medium of the British in this country, such as *port*, *foss*. Perhaps the only survivals of genuine Latin names (not Latinised British, and not merely containing Latin words used currently in English) from Roman times are Aust (Lat. Augusta, Glos.) and Speen (Lat. Spinae, Berks). One of the commonest words of Latin origin used by the English in place-names as well as in everyday speech was the O.E. *stræt* [Lat. *strata* (via), paved way], modern Street-, Streat-, Stral-, Stret-, proximity to a made road.

Scandinavian Element

Next in order (leaving the English element aside for the moment) comes the Scandinavian contribution. The chief Danish settlements during the late 9th and early 10th centuries, as illustrated by place-name evidence, were in Yorkshire and the Midland counties of Lincoln, Nottingham, Derby, Leicester, Norfolk; fewer Scandinavian names occur in Durham and Suffolk, and fewer still in Northumberland, Essex and Bedfordshire. There is a strong Norwegian element in Cumberland, Westmorland and Lancashire, and Scandinavian names occur also in parts of Cheshire. In the west, apart from the northern counties just mentioned, Scandinavian names are almost entirely confined to coastal features such as capes and islands, and mostly indicate sailors' landmarks rather than settlements. Such are the island names ending in *-ey* or *-ea* and *-holm*, e.g. Anglesea, Ramsey (near St. David's), Grassholm and Skokholm (N.W. of Milford Haven), Flatholm and Steepholm (in the Bristol Channel), and Lundy. A Scandinavian settlement is, however, suggested by a group of names on the South Wales coast, round Carmarthen Bay (Haverford, Swansea, etc.).

Among the commonest Scandinavian elements found in place-names in England are: for a village or homestead, *-by* and *thorp* (the latter sometimes, however, represents the corresponding English word); for a division of land, enclosure, meadow, etc.; *-eng*, *-garth*, *-thwaite*, etc.; for a hill or slope, *bank*, *breck*, *how*, *fell*, *nab*, *meol*, *rig*; for an island, *skar*, *skerry*, and

the *-ey* and *-holm* already mentioned; for other natural features, *gill*, a valley, *wray*, a corner, *lund*, a forest, *scarth*, a pass, *mire*, muddy ground, *beck* or *force*, a stream. Numerous names of animals, trees, etc., and personal names appear in unmistakable Scandinavian form.

French Influence

The remaining foreign factor, though not very strongly marked, is the French or Norman. French influence appears in two directions, (a) in actual names, (b) in the effect of Norman-French spelling on native names.

After the Norman Conquest, French names were sometimes given to the castles built by the invaders, or to the monasteries of Norman foundation. An example of the former is the castle built by William Rufus (against Robert of Mowbray) in 1095; as the Anglo-Saxon Chronicle puts it, "he ordered a new castle to be built near Bamborough, and called it in his own language Malueisin (Malvoisin), that is in English Evil-neighbour." Other castle names are Richmond (*Richemont*), Pomfret or Pontefract (Fr. *pont fret*, broken bridge and a Latin form of this), Montgomery (from a French place-name), Mold (Fr. *Mohaut*, Latin *Mons altus*), and the not uncommon names beginning with Beau-, Bel-, Bew-, etc., meaning fair: Beaulieu, Bewdley (these are both fair place), Beauchamp or Belchamp, fair field, Belvoir, fair view, Belper (*bel repair*), Bellasis or Belsize, well situated, and so on. Among the monasteries we have Vaudey in Lincolnshire (from French, from Lat. *Vallis Dei*, valley of God), Meaux in Yorkshire (named after Meaux in France), Rievaulx (valley of the Rye), Jervaulx (valley of the Ure).

Other descriptive French names of various types are Malpas (Cheshire; evil pass), Haltemprice (Yorks; great undertaking), Butterby (Durham; *beau trouve*, fair find), Sart (Devon; O. Fr. *essart*, clearing in a forest), Meshaw (Devon; O. Fr. *mal essart*). Names indicating the legal position or official character of a place may be seen in the Devonshire Justment, Straypark (containing O. F. *estraieur*, goods left without an heir), Purps (O. Fr. *pourprise*, enclosure), Viza (O. Fr. *devise*, boundary); compare with the last the Wiltshire Devizes (boundary lands). A French suffix is sometimes substituted for a native one in a genuine English name, such as Jesmond (Fr. *Mont*, hill) for earlier *Jes-mouth*, or Enville, Longville, Turville, etc., for earlier *-field*. Another French habit which has in some cases survived was the translation of the English in *the* by French *en le*, or simply *le*, in such compounds as Chapel-en-le-Frith (in the wood), Thornton-le-dale, Chester-le-Street.

Numerous French personal names survive in the feudal forms where an attributive second

element is added to an ordinary English name, commemorating the former holder of a manor, ville, etc. Such are Compton Verney, Redmarley Dabiot, Rotherfield Peppard, Cheriton Fitzpaine, Weston Peverel, Woodterrill, Stoke Lacy, and Pool Anthony.

Change of Initial

The French influence on spelling has sometimes actually altered the pronunciation, in names containing sounds or combinations of sounds unfamiliar to the Normans. Such are the change of initial *Cn-* to *Can-* (e.g. Cannock, earlier Cnoc), the substitution of *ce* (*se*) for earlier *che-* (e.g. in Leicester, Cirencester, Mancetter, etc., as compared with Manchester, Chichester, etc.), of *J-* for initial *Y-* (as in Jervaulx, Jarrow, earlier *Yore-* *Yar-*), of *Sal-* for initial *Shr-* (as in Salop-shire for Shropshire), of initial *N-* for *Sn-* and *T-* for *St-* (e.g. Nottingham, from Snotingeham, Tutbury for Stutesbiry), of initial *T-* for *Th-* (e.g. Turnworth for Thorne).

But, in spite of all the striking examples of foreign influence on the place-names of Britain, it still remains a fact that an overwhelmingly large proportion of the names are definitely English. These are far too numerous for any attempt to be made here to list or classify them. The student is referred to the various volumes of the English Place-Name Society; for a general introduction to the subject, the Society's first volume, *An Introduction to the Survey of English Place-Names* (Cambridge, 1924), cannot be bettered.

Old-time Field-names

No comprehensive survey of field-names, has yet been made and, indeed, it would be a difficult task. In some areas, where country has yielded to towns, field-names have disappeared with their fields; in others, even though they are still agricultural, the old names have fallen into disuse, though some (with their

situations) may still be disinterred from tithe-maps and the like, or from the memory of old inhabitants. The medieval records contain hundreds of field-names, many of which cannot now be traced.

A few typical and interesting forms may be quoted. Among the commonest elements in field-names are furlong, -land, -ley, -hill; -worth, -slade, -acre, -ham, -croft. In Devonshire, for instance, occur such forms as Nine-acreland (13th cent. Nyenakerland), Longacre, Caines acre; Larkeland, Wolvesland (Wolf's), Scheppeland (sheep-) are named from the creatures frequenting them; Benlond, Nep-lond (M.E. *nēp*, turnip) from their crops; Broomelond, Rushlond, etc., from vegetation. Worcestershire has *Pewytlowe* recorded some two or three hundred years earlier than the earliest forms of the word *peewit* quoted by the Oxford English Dictionary. Other out-of-the-ordinary Worcestershire field-names are Good-wyvesfurlong (1587), Calvestayles (16th cent.), Bedfordshire has Doggetail, Goosebath, Seven-brethren (1217). Yorkshire has a number of Scandinavian elements in its field-names, as well as its place-names. Such are -garth, -thwaite, -eng, -flat (e.g. Wreckeflatte, flat where the wreck was cast up).

BOOK LIST

General. *Language Its Nature, Development and Origin*, O. Jespersen (Allen & Unwin); *History of Language*, H. Sweet (Dent); *Language and Languages*, W. L. Graff (Appleton); *The Loom of Language*, F. Bodmer (ed. L. Hogben) (Allen & Unwin); *Historical Study of the Mother Tongue: an Introduction to Philological Method*, H. C. K. Wyld (Murray); *The Growth and Structure of the English Language*, O. Jespersen (Blackwell); *Primer of Spoken English*, H. Sweet (Oxford University Press); *History in English Words*, O. Barfield (Methuen); *The Meaning of Meaning*, I. A. Richards & C. K. Ogden (Routledge).

Names and Place-names. *Concise Oxford Dictionary of English Place-Names*, F. Ekwall (Oxford University Press); *English River-Names*, E. Ekwall (Oxford University Press); Publications of the English Place-Name Society (Cambridge University Press).

DRAWING AND DESIGN

T*his highly practical Course provides a reliable groundwork for self-tuition in many branches of art. It includes fully illustrated Lessons in Drawing, ranging from the representation of common objects in simple perspective to figure drawing and outdoor sketching in pencil, pen, and water colour ; in Pattern Design, especially its application to industry ; in Lettering and Layout, according to the best contemporary styles ; graded practical exercises in Perspective and Geometrical Drawing ; and a section on Modelling and Casting. All the Lessons have been contributed by specialists experienced in the most effective methods of instruction.*

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LESSON 1

The Elements of Drawing

DRAWING is not only the basis of the fine arts; it is also a medium of human expression far older than writing, far more direct, and far more natural to mankind. Most children draw well instinctively, usually before they can write. That they lose an inborn habit is due partly to unwise instruction, but chiefly to lack of encouragement and lack of confidence.

Drawing may be broadly defined as the representation, pictorial or diagrammatic, of things seen or imagined. The purpose of a diagrammatic drawing is to convey accurate information as to construction, materials, dimensions, processes, mechanical action, etc. Examples are the working drawings of an engineering draughtsman and the architect's plans, elevations, and cross sections. To produce such drawings, mechanical means are used, i.e. rulers, compasses, etc., also various conventional methods of representation intelligible only to the specialist for whom the drawings are prepared. A map is a familiar type of informative representation of the diagrammatic sort, expressed by various widely accepted conventions.

The pictorial kind, which is more generally accepted as being denoted by the word drawing, also conveys information; but its accuracy is only approximate, being dependent on judgment of eye and skill of hand. It is usually concerned only with the outward appearance of the thing represented. It is further conditioned by the particular emotion or intellectual intention of the draughtsman (who may have no wish or need to register *all* the facts); also by the limitations of his chosen medium.

Range of Mediums

As to the medium, if most people think of drawing in terms of pencil (or pen-and-ink) and paper, this is only because these are the commonest and most accessible tools for the job. In fact, the range of mediums is without limit. It includes chalk, charcoal, crayon, paint-brush, airbrush, scraper, etching needle, engraver's burin, tattooer's needle, anything indeed that can record an intelligible mark on any surface which can register it—down to the point of a stick in the sand, or a child's finger on a steamy window.

These lessons, however, assume that the student will choose the more obvious mediums: pencil or pen, and brush.

The simplest convention in drawing, whether pictorial or mechanical, is that of line, a convention so universally accepted and understood,

now as in ancient Egypt, or even earlier in the caves of Palaeolithic man, that most people forget the striking fact that there is no such thing in nature as an outline. Nevertheless, a drawing is no less a drawing if it discards line in favour of solid masses of varying tone or colour.

Perspective

As drawings of all kinds are normally made on a flat (i.e. two-dimensional) surface, the essential problem of the pictorial draughtsman is to present the *illusion* of three-dimensional reality. The mechanical draughtsman, e.g. the architect, solves the problem by giving the facts from several views, front, sides, back, and from above, with enlarged representation of certain details as required; or he can use the method called "orthographic projection," which is explained in Lesson 18. But the pictorial draughtsman must be generally familiar with the laws of linear perspective, which enables him to represent objects *as the eye sees them*.

The laws of linear perspective have been formulated. They can be worked out mathematically and applied mechanically. Lessons 7-10 present graded exercises in the application of exact perspective. The casual draughtsman can dispense with them if he chooses, and attempt to rely entirely upon an untrained eye; but the serious student will be wise to give them full attention. As in other studies, the hardest way brings the surest results and that thorough understanding of the meaning of perspective which ensures an underlying soundness of draughtsmanship even in the lightest and most rapid sketch. It is worth noting that even the most wayward of so-called "modern" artists work on the basis of a firm understanding of perspective. Their distortion of it or departure from its principles is deliberate, made in a quest for deeper truths than can be revealed by a representation of visual appearance. But good representational draughtsmanship remains the basis of their art.

Additional Subtleties

Correct perspective and correct proportion are the elements of all good representational drawing. When these are deficient, the work of the draughtsman is said to be "out of drawing." But additional subtleties can be cultivated, such as the correct recording of light and shade and shadow, of tone values (light and dark objects), and colour values; distinction between "sharp" edges and "rounded" edges; and even suggestion of the

relative *weights* of different things. All these aspects of drawing receive fuller mention in the course of these Lessons.

The chief task of the student is to draw anything, anywhere, at any time. Cultivate the habit. Get to know your tools and what they will do for you. Tackle your problems sincerely. Avoid short cuts.

Carry a sketch-book in your pocket wherever you go, and use it undiscouraged by whatever may seem to you to be failures or mistakes. Remember that a sketch-book is a very personal thing, and what you put into it can be, if you

wish, as much for your eye alone as a private diary. But if you practise, practise, practise, having a shot at drawing everything that interests you, you will inevitably discover not only an exciting new interest in the form and construction of those things, but also increasing power to represent their appearance and to say about each exactly as much or as little as you please. In other words, you will have found a wonderful new means of self-expression which is, at the same time, one of the oldest such means in existence. You will have at your command a universal language.

LESSON 2

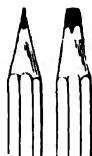
Tools and Materials

THE first necessities for the serious student are a good drawing-board of "half-imperial" size (22 ins. by 15 ins.) ; also a T-square, two set-squares (one of 45 degrees, the other of 30 and 60 degrees), a clearly marked ruler, preferably a steel one, and a protractor ; a pair of compasses, a pair of dividers, a good ruling pen, and drawing-pins.

Pencils

Pencils should be of various degrees of hardness, from 2H for geometric work and diagrams to HB and B for freer and more emphatic statement. The pencil is the basic tool of every artist. Its portability and immediate readiness for use make it the most popular medium of all. In its harder forms it gives a line of high precision, while the softer kinds yield a wide range of gradation.

Most people sharpen a pencil to a point, but it is often an advantage, in both geometric and free drawing, to have a wedge-shaped end, so that the pencil can be turned in the fingers to change from a broad line to a fine line without change of pencil. A pencil is especially valuable for quick notes in a sketch-book or for laying in a foundation over which pen-work is to be added.



Some people reject a pencil for drawing once it has been reduced by, say, over half its original length, on the ground that a shorter pencil, being less lightly balanced and needing a firmer grip closer to the point, loses a certain delicacy. This is purely a matter of opinion. So long as it is not a mere stub that can scarcely be held in the fingers, there are indeed advantages in a short pencil, apart from economy and the fact that a pencil can become something of an old friend. But if a long pencil is preferred for the sake of balance, one can always use a pencil-holder or porte-crayon.

What is important is that the pencil should be a good one, made by a reputable firm of manufacturers, for only so can you be quite certain that the quality of the graphite will be consistent throughout its length.

Keep your pocket knife sharp. A blunt knife will eat up a pencil all too quickly.

Charcoal

Charcoal can be manipulated by skilful hands to give a quick and effective result, and it is a medium that gives a greater effect of strength than a pencil, with rich velvety blacks. It is often used in combination with water-colour, also as a groundwork for oil paintings. Sometimes it is combined with soft chalks or pastels. One of its characteristics is deadness of colour ; for this reason it reproduces well.

Charcoal is sold in two forms ; willow, or stick, which is a natural product ; and Siberian compressed charcoal. The latter has some advantages over the former, as it is less easily broken, and is made up in varying degrees of strength, from grey to deep black.

The great disadvantage of the charcoal medium is that the drawing must be "fixed," or it will soon be rubbed away. Fixative can be purchased, but a cheap and effective substitute is a solution of resin in methylated spirit. This must be applied by a spray, blowpipe, or scent-bottle and bulb.

Charcoal is best kept sharp with a pad of glass-paper or emery-paper.

Chalk

Black chalk is an admirable medium. Its use demands concentration and careful selection of line, for a chalk line is more difficult to erase than a lead-pencil line. This is no disadvantage in the training of a student ; many teachers prohibit the use of an eraser altogether.

A carbon pencil is a good variety of black chalk to use. Such pencils can be obtained in

various degrees of hardness, and are much used by those who draw for half-tone reproduction.

Red chalk was a favourite medium of some of the old masters. Holbein, Michelangelo, Watteau, and Rubens made great use of it for their magnificent drawings. But for the novice it is dangerously flattering, because he is apt to be so consoled by its lovely colour that he may disregard faults in his drawing. Therefore it is not recommended here.

To sharpen chalk, work with your knife in the reverse direction, cutting *towards* yourself. By so doing you will avoid much irritating wastage.

Although chalk is not rubbed or smeared as easily as charcoal, it is advisable to fix a chalk drawing, using the same process as for a charcoal drawing.

Holding the Pencil

There is, by the way, a method of holding pencil, charcoal, or chalk which most artists train themselves to use. Though not always easy for a novice, especially one who does much writing, it is a method warmly recommended. Once acquired, it renders the medium more directly responsive to the artist's will. The pencil is not gripped as for writing, with the top of the pencil (the unpointed end) emerging from between the thumb and forefinger and pointing to the shoulder. Instead, it is allowed to rest lightly on the forefinger, and to some extent on the second finger also, these fingers being somewhat *under* the pencil; while the thumb provides an equally light support from a position somewhat *above* the pencil, the length of which remains *below* the palm of the hand, parallel with the wrist. The list is clear of the paper, not resting upon it, as in writing—though many artists allow their little finger to give a certain amount of light support.

Thus the movement of the pencil is not restricted in scope, as in writing, merely to the radius of the finger. Drawing is done not with the fingers only, but by the movement of the whole "free" hand—or, if necessary, of the whole arm. Those whose practice it is to rest the little finger on the paper actually—often unconsciously—trace out with the tip of that finger, as it moves freely over the paper, a kind of echo of the drawing that the pencil-point is making near by.

Pen and Ink

Pen-and-ink drawing has been practised from time immemorial. The earliest form of pen, the reed, is still used, though nowadays the majority of pens are of metal. Most modern illustrators use the pen, because modern methods of reproduction give an almost perfect facsimile of a pen line. The work in hand will often determine the type of pen to use, sometimes a

fine Gillot (known to school-children as a mapping pen), sometimes a broader kind. A stock of various types and sizes should be acquired, and their possibilities tried and remembered. Some types of fountain-pen are very suitable for drawing—not excluding the ball-point type, though this lacks flexibility.

As for ink, there is no necessity to use Indian ink, unless you will be adding washes of colour, when its waterproof quality will be an obvious advantage. The intense black of Indian ink may commend itself, but there is little wrong with ordinary blue-black, even for reproduction.

Choice of Paper

For drawing in pencil the most servicable paper is an ordinary cream cartridge paper, provided you are careful to use the correct side of the paper, the pressed, or "prepared," side. You can recognize the correct side by holding the paper to the light and observing the watermark. If the watermark is the correct way round, you are looking at the correct side of the paper. Close observation will reveal a distinction between the right and wrong side of a piece of paper almost as clear as that between the right and wrong side of a carpet! In a short time you will choose the correct surface at a glance.

Whatman Paper and Bristol Board

Cartridge paper is also satisfactory for early exercises in water-colour drawing, but for more ambitious efforts you will probably prefer a Whatman paper, *not* hot-pressed. Its surface, on the correct side, is very pleasant to work on with a brush, and will stand plenty of rough treatment. The best method of stretching such paper is given in Lesson 11.

For pen-and-ink drawing, a smooth white Bristol board, such as is used in work intended for reproduction, will take any pen, but other kinds of paper may be preferred. The student need only remember that the rougher its texture is, the less he can use a fine crow-quill without spluttering and the more he will need a broader, more flexible nib.

Brushes

Now for brushes. Brush-drawing in water-colour can be trying to a nervous novice, but the practice should be cultivated, even though its difficulties at first seem appalling. The Chinese and Japanese are taught to use brushes from childhood, and the result is seen in the extraordinary facility and flexibility which distinguish their best drawings. For drawing delicate lines, a fine brush is needed; for broad washes, a larger one. A collection of sable brushes of various types will follow practice. Perhaps six of different sizes are as

many as will be demanded by ordinary work. A flat brush, two inches across, is a desirable piece of equipment for laying large washes.

Look after all brushes well. Never put them away full of colour, but always wash them out thoroughly in clean water and gently draw

the hair to a point before laying them by. The colours themselves are dealt with in Lesson 6. Otherwise the above are the basic tools of the well-equipped student. The inevitable accumulation of extras will follow as personal preferences and requirements dictate.

LESSON 3

Drawing from Common Objects—1

ALTHOUGH on the face of it this may look like an attempt to teach an inexhaustible subject in two Lessons, such is not our purpose. Although what is written here may be read and assimilated within half an hour at the most, it is intended only as the basis for many separate exercises in which the student will teach himself, by constant practice, infinitely more than can be written down. Indeed, practice in drawing from common objects can be, and often is, profitably and pleasurably pursued indefinitely, for a whole lifetime even, and with every fresh attempt the student will discover fresh and absorbing problems to solve.

Nevertheless there are certain principles to be stated which will start the student on practical lines, and some guidance to be given relating to the direction and arrangement of that course of self-training which alone can bring satisfaction.

General Principles of Perspective

First, perspective. Later Lessons in this Course (Lessons 7-10) deal with the exact mathematical implications of the science of perspective, but it is suggested that these are best left alone until the student has become fairly familiar with the general principles of perspective and the method of representing their effects by reason of his own observation and practice. The more practice he has had in relying on his own observation of the principles of perspective and their application to the representation of simple objects, the more valuable and the more illuminating will be the exercises in their mathematical application.

The elementary effects of perspective and foreshortening are familiar to anybody who has ever walked along a street with his eyes open—the way, for example, that lamp-posts and houses some distance away appear shorter and smaller altogether than those nearer to you; that the roadway itself appears to become narrower as it recedes into the distance, the two gutters sloping towards each other; that the line of roofs appears to slope downwards; that the sides of the houses are foreshortened as you look along them, those on the side of the street on which you walk being more sharply foreshortened than those on the opposite side.

These effects, however complicated they may seem, are to be found in the simplest objects you can choose to draw, waiting for you to record them convincingly on your paper.

So far as horizontal and vertical lines are concerned, they can be reduced at once to a few simple and inter-related facts.

1. All horizontal lines receding from the eye (telegraph wires, railway lines, curbstones, the top and bottom of a wall, the top and bottom edges of the side of a box) appear to slope upwards or downwards *towards various points on the eye-level*.

2. All *parallel* horizontal lines receding from the eye appear to slope upwards or downwards in converging towards a *single point* on the eye-level.

3. The farther above or below the eye-level receding horizontal lines actually are, the more steeply do they appear to slope downwards or upwards.

4. Any horizontal lines receding from the eye *on* the eye-level (unless immediately in front of the eye) appear to remain horizontal but to be shorter than they actually are. If such a line is immediately in front of the eye, it will not be visible except as a point.

5. Vertical lines appear to remain vertical; but a series of vertical lines of the same height and the same distance apart (lamp-posts) appear shorter and nearer to one another the farther away they are.

Basic Forms

All the foregoing is of the first importance to the correct drawing of any object based on straight horizontal and vertical lines, i.e. any object based on the cube or the rectangular prism, e.g. a box, or on any other kind of prism, triangular, hexagonal, octagonal, etc.

This is the place, too, to point out that virtually every object in existence, whether artificial or (much less obviously) natural, is based on a simple geometrical form or, more often, a complex combination of various simple geometrical forms, with probably one or two predominating. If you know how to draw these simple forms accurately, you are on the way to being able to draw anything. The great thing is to recognize the basic forms first, *before* you put pencil to paper. It may be a

cube, a rectangular prism, a triangular prism, a pyramid or truncated pyramid, a sphere or section of a sphere, a cylinder, a cone or truncated cone, or a combination of any or all of these or parts of these. The dome of St. Paul's Cathedral, for example, is mostly based on a combination of cylinders and hemispheres.

Apparent Angles

Turning to simpler things, the basic form of the objects shown in Figs. 1-21 should be readily recognized, except perhaps in Figs. 20 and 21. Because the sides of the step-ladder slope towards each other, it is based on the pyramid rather than the triangular prism.

It is advisable to start with angular objects, with plenty of straight lines, leaving curved ones (cylinders, cones, etc.) until later.

If you choose a rectangular case, such as that shown in Fig. 4, place it in front of you below the eye-level, so that you can see the top and two sides, all of which are affected by the laws of perspective. Now, it follows that all the horizontal lines will be represented on your paper not by horizontal lines but by lines that slope upwards away from you at various angles (upwards because all the lines are below the eye-level). It is for you to record those apparent angles as exactly as you can. Remember that the lines representing the bottom of the case, being farther below the eye-level, will have to be represented by a steeper angle than those representing the top edge of the case. Just how much steeper is for you to decide, and then to record. You can discover the exact angle with a protractor if you wish. Why not? There are always the firm vertical lines to take as a base.

The slope of the bottom edges being steeper than that of the top edges, it follows that the vertical lines joining them at the far ends will be *shorter* than the vertical line representing the nearest corner; and so they should be, because vertical lines of the same height appear shorter the farther they are from your eye.

Apparent Proportions

You have to observe and calculate the *apparent* proportions of lines to each other, rather than the *real* proportions. You are dealing in *appearances* all the time. But it is clear from what has been said that apparent proportion is all part of the illusion of perspective. Anyway, the one helps the other. If your angles are wrong, your proportions will be wrong; if your proportions are wrong, your angles will be wrong—and the effect will be something like that in Fig. 21, in which almost everything is "out of drawing." So plug away at rectangular box-shapes of all sorts and sizes and proportions, drawing them from many different angles and in many different

positions—above the eye-level, below the eye-level, partly above and partly below, one tilted up against another (books are useful studies for this).

Do not worry too much about the details until you have satisfied yourself that you can draw the basic forms correctly. No amount of elaborate detail will obscure or remedy initial errors in proportion and perspective.

Curvilinear Forms

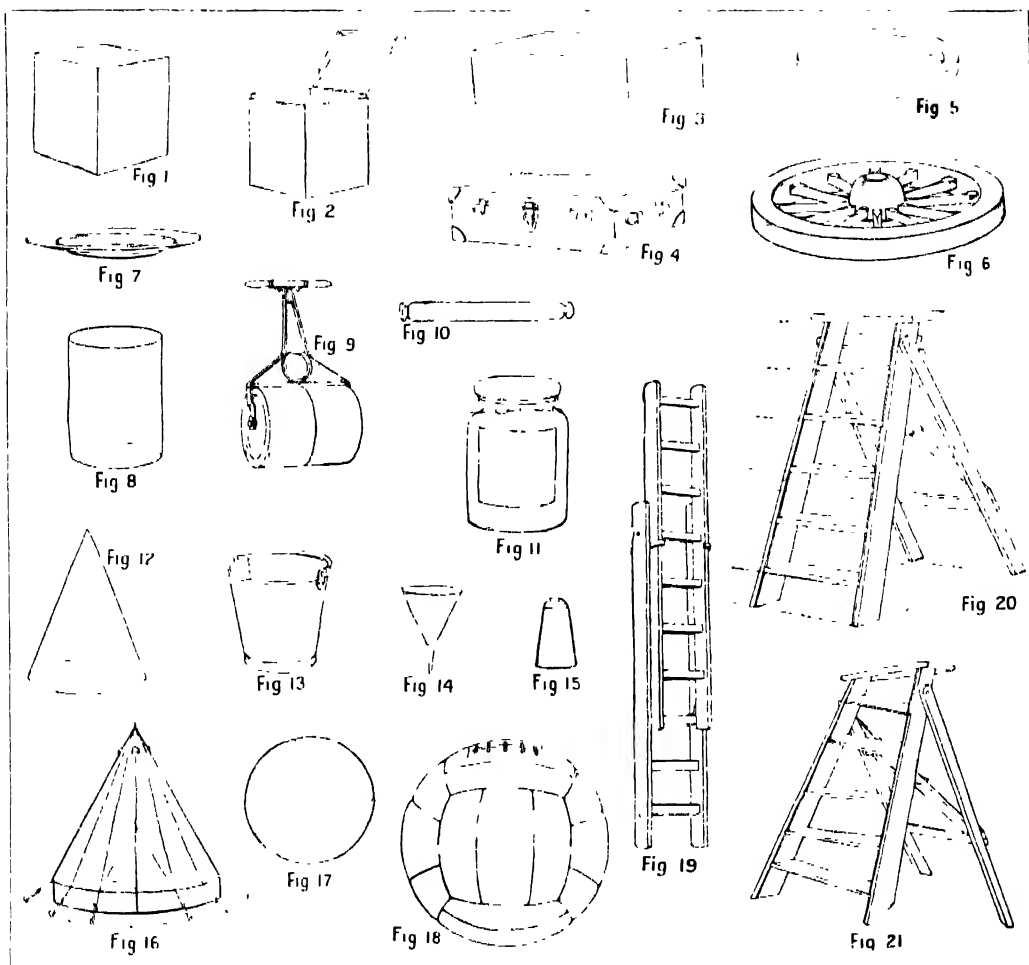
Now for cylinders and cones and other curvilinear forms—jam jars, plates, cups and saucers, cans of various shapes, bicycle wheels, buckets, garden rollers, rolling pins, funnels, pots and pans, drainpipes, jugs. The importance of correct proportions, especially proportions of height to width, is the same as before. Your greatest difficulty will be the perspective representation of a circle (or of part of a circle). A complete circle, when foreshortened, appears as an ellipse (flattened circle), and an ellipse is a tricky thing to draw at first.

The thing to remember about a circle in perspective is that its diameter in *one particular direction* can be thought of as a horizontal line that does *not* recede from the eye and therefore is *not* seen in perspective at all. This is the *major* axis of the ellipse, and is the actual diameter of the circle. On the other hand, another diameter, drawn through the first at right angles to it, would represent a horizontal line receding very abruptly from the eye and therefore very foreshortened—how much foreshortened would vary, of course, with its relation to the eye-level; and if it were directly in front of the eye, it would be drawn as a vertical line (see the third rule). This is the *minor* axis of the ellipse. Every other diameter between the two would be represented by a line of different length, and the line joining all these diameters is the circumference of the ellipse.

An ellipse curves continuously. It has no sharp point at its extremities. If it is the flat top of a cylinder, the vertical sides of the cylinder join it at a gentle tangent, not at a sharp angle.

If the top of a solid cylinder is above the eye-level, you will, of course, see only the near side of the ellipse. The same applies to the base of a solid cylinder below the eye-level, the only difference being that in the first case the curve seen is an upward curve to the centre, in the second case a downward one. But in each case it is best, in the early exercises, to draw in the whole ellipse lightly. In this way you are more likely to represent the correct tangential junction of the straight lines of the sides, also you will get the correct *depth* of the ellipse more readily. (See Figs. 5, 8, 11, 12, 13.)

Here can be conveniently stated the further elementary principle of perspective regarding



Figs. 1-21. BASIC FORMS. Familiar objects that should be closely studied by the student. Note the bad drawing in Fig. 21 due to the common fault of wrong perspective.

all circles whose area is parallel to the ground (i.e. not one standing on its circumference like a wheel): the nearer it is to the eye-level (whether above or below it), the flatter is the ellipse. Such a circle when *on* the eye-level would be represented by a single horizontal line.

These facts can easily be demonstrated with a penny, and they are well worth remembering, for an all-too-common fault in the drawing of cylinders is to make the curve at the base to be flatter than that at the top, when it should be rounder—in other words, the vertical height of the cylinder between the two ellipses should be greater in the centre than at the sides. This is only to be expected if you remember that the centre vertical represents a part of the cylinder nearer to you than the two sides.

To draw every ellipse in full, even if you can see only the nearer half, will help you to avoid this easy mistake. (See Fig. 8.)

A cylinder lying on its side (rolling-pin, garden roller, etc.) combines the ellipse with horizontal lines receding from the eye, and presents a real test of your observation and your progress in recording what you observe. The ellipses are still there, but because the horizontal lines appear to slope at different angles (which you will have to estimate) the further ellipse will appear smaller than the nearer one. This is not the only way in which the ellipses are affected when they are, as it were, standing upright, for the same rule applies to such ellipses to right and left of your eye as to the "horizontal" ellipses in relation to your eye level: the nearer they are to you, the

flatter they need to be drawn---until an "up-right" ellipse dead in front of you would be represented as a single vertical line. So the nearer ellipse is both larger and flatter.

All the drawings in Figs. 1 to 21 are in outline only, simple studies in basic form, proportion, and perspective. Wherever these are correct, you have a soundly constructed drawing with an effect of three-dimensional solidity that owes nothing to light and shade. Often enough the artist who is interested in basic form and structure tends to emphasise the fact, making it more immediately obvious than other qualities of his work--beauty of colour and texture, finesse of detail. It is better so, for the student at least. It is a more satisfying achievement to have produced a drawing that looks like sound joinery than one which suggests that the objects depicted, however true in other respects, might be made of cotton wool.

Incidentally, it is not intended that the student should copy these or any other pictures illustrating the Course. They are intended as suggestions, such as will lead the intelligent student to put up his studies for himself. Here are further suggestions, combining various basic forms and each presenting new problems: a loaf of bread on a plate with a cheese dish; a bottle and a saucepan; a dustpan and brush; a lady's handbag; a kettle and a jug.

Note carefully all the new angles that are set up by the juxtaposition of two or more

objects. They all have to be correctly estimated if the drawing is to hang together. Note also the proportions of one object to another and *to the space between them* at various points. How far does one project to right and left or above and below the other---and at what angles?

Note the *shape* of any background spaces between objects or between parts of the same object. Many artists regard the shape of the "spaces left" as a kind of test of the accuracy of their work. If the outlines of the objects have been accurately drawn, the "spaces left" will have been accurately represented too; and if the "spaces left" do not work out correctly in shape or proportion, then something is wrong with the drawing of the objects. To use this ingenious test means only a slight readjustment of the mind, similar to that of someone who decides to draw a map of the western edge of the North Sea rather than of the East Coast of Britain. The two things should be the same, though visualised from a slightly different mental viewpoint; but only if both are accurately drawn.

When you have become accustomed to groups of objects of your own contriving, look for natural groupings here, there, and everywhere, indoors and out, and keep your sketch-book handy. Also try your hand at some far more complex single object, such as a motor-car, which consists of many different basic forms and parts of basic forms all running into or overlying one another.

LESSON 4

Drawing from Common Objects--2

So far, attention has been concentrated on the shapes of objects, as expressed in basic lines. But the student will not be at it for long before interest becomes tempted by the alluring elaborations of tone and of light and shade, which promise to give his drawings an even greater effect of solidity, to make them look more "real." It cannot be emphasised too often that skilful representation of tone or of light and shade or of both will not serve to disguise a drawing that is weak in proportion and perspective. They may even make a bad drawing look worse.

Tone and Shade

That tone and light and shade are commonly recognized as a kind of added ornament to what is fundamental was evident in the school-child's cry, heard so often in other days when the teaching of art in schools was rather more unenlightened than it is to-day: "Please, sir, may I begin to shade?" This attitude is not quite in accordance with what is desirable.

Certainly a good drawing need not be "shaded." But if it is, then the drawing should have been conceived in terms of tone and of light and shade from the beginning, and the early settlement of proportion and perspective should have been no more than a faint indication in preparation for the real work. For light and shade and tone are *not* something added. They are there from the start, in fact they are often the only means of recognizing the essential shape of an object.

The moment you set out to produce any drawing in full tone, you are, as it were, painting with a pencil, seeing your objects in terms of mass rather than of line, and so building up your drawing in a very different way.

Tone and shade are not quite synonymous terms, but they are commonly confused because they do, in practice, overlap. It is the same with shade and shadow. Here are a few working definitions:

Light and shade is the effect of the play of light upon objects, those parts or surfaces turned

away from the light being said to be in shade. The depth of the shade varies according to the degree at which it is turned from the light ; light and shade therefore reveal the shape or form of an object.

Shadow is the dark shape thrown by one object upon another where the first object interrupts the light that would otherwise fall upon the other ; so that even an object facing the source of light may be wholly or partly darkened by the shadow of another object. Shadow does *not* reveal the forms of objects as shade does—or only very indirectly.

Tone is concerned first with the *intrinsic* lightness and darkness of things—not necessarily with their colour, because one can have many tones of the same colour, yet as a rule (not invariably) a blue is deeper in tone than, say, a yellow ; secondly it is concerned with the relative distances of objects, a nearer object being “stronger” in tone than one more distant. But the term is, confusingly, often used to denote the depth or darkness of shade or shadow, partly because that part of a dark object which is in shade or shadow will usually be darker than the corresponding part of a light object. Thus we have the anomalous term for that part of a surface between the light and the deeper shade “half-tone.”

You could produce a quite satisfactory solid drawing in light, shade, and shadow, but it would suggest that everything represented was intrinsically the same dead white or grey. So in practice all these elements are thought of together and treated simultaneously.

High Lights

There are two other terms requiring definition.

High light is the term for the direct reflection, particularly on any shining, glazed, or polished surface, of the main source of light (e.g. a window). Its area varies according to the shape of the object upon which it falls. It is, of course, the lightest and brightest point of all, and is unaffected by the tone or colour of the object itself. Often its representation is quite beyond the range of the medium ; for example, if a polished white jar stands in a strong light, one will obviously have to leave the lighter side of the jar free of all shading—how then will one be able to represent the sparkling high light, by comparison with which the white jar is far duller and darker in tone ? Answer : one cannot. Or imagine an artist who paints the portrait of a man in full evening dress facing a strong light. The white shirt-front and the shadows of the coat will require the strongest extremes of contrast in tone. But suppose that in the centre of that shirt-front a diamond stud is gleaming as it reflects the source of light on its polished facets. Such a high light is well beyond the range of any

palette, and in practice the artist would have to disregard it.

Light is also *reflected* on the darker side of an object from other objects or from the background. A reflected light is easily recognizable in any cylindrical object, whether highly polished or not, and careful observation of it will make your treatment of light and shade more effective. In practice it means that the darkest shading of a cylindrical or rounded object is usually *not* required at its extreme edge, as one might expect, but a little way in, most often very near the point where light merges into shade.

Most beginners tend to make all tones *too dark*, especially shadows. In ordinary daylight there is little real black in anything. Test this by looking closely at a highly polished black shoe.

Representing Tone with a Pencil

The next thing to note is that there are three ways of representing tone with a pencil : by mass, by lines, by a combination of both.

In the first method all light and shade and tone are represented by solid masses of pencil shading of various depths, applied to the paper in such a way that they might have been applied with a paint-brush. It is a somewhat laborious method, besides being a waste of the medium. What is the use of having a point if you are not going to use it to make lines ? Moreover, your darker masses, which may require several “layers” of shade, will soon look unpleasantly shiny.

The second method uses what is called “hatching.” The shading and the tones are added by means of a series of parallel pencil lines. The weight and thickness of the lines, as well as their distance apart, vary according to the depth of tone. It is a conventional method (because there are no such lines to be seen in reality, any more than there is an outline), but in combination with the use of outline it can be very effective, and certainly makes full use of the pencil point, and is a much quicker and more precise method.

There is no particular direction in which the lines should run. For smaller details the shape of the object itself will often suggest the best direction for the lines—vertical, horizontal, diagonal. But for larger masses it is best to stick to the natural diagonal of right-to-left downwards if you are right-handed, left-to-right downwards if (like Leonardo da Vinci) you are left-handed. Whatever you do, do not vary the direction too much in the larger masses, or your drawing will begin to resemble a patchwork quilt. Also, it is wise to avoid direct “cross-hatching,” i.e. drawing lines first in one direction, then crossing them with other lines going in the opposite direction. If you

wish to add emphasis to a tone by drawing a second lot of lines on top of the first, and are tempted to alter the direction of the lines, make the change of angle as slight as possible.

Combination of Line and Mass

Hatching is the obvious method to be adopted for pen-and-ink work, solid masses of ink being necessarily of one tone only. But a pencil is a far more responsive implement than a pen, and it is a pity not to exploit its softer quality. So the most satisfactory technique is a combination of line and mass. The drawing in Fig. 22 is solid enough, but there is no attempt to disguise that the darker portions are made up of individual lines—diagonal on the handbag, horizontal on the base of the brush and in the shadows on the ground. In other words, the lines fuse together to make a mass, and a very lively mass, too.

There is no reason why you should not use pencils of varying hardness in the one drawing. For Fig. 22, an H pencil was used for the brush bristles and the metal clasp of the handbag, an HB for the leather of the bag and the base of the brush, and a B for the darkest touches.

Set up similar groups for yourself, getting as strong a contrast in tone as possible, e.g. a white basin against a black kettle (for the darkest parts of the kettle you may need a 2B pencil). Do not draw on too small a scale. Use a sheet of cartridge paper at least of quarter-imperial size (15 ins. by 11 ins.), and fill the paper. Better still, rule a rectangle within, say, one

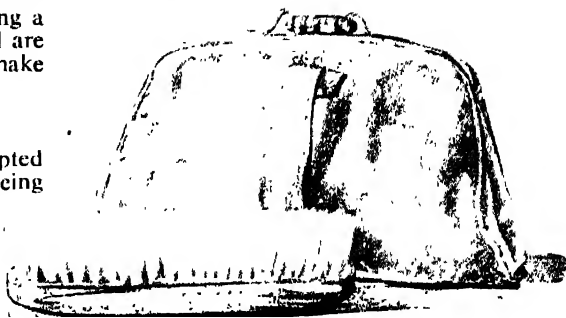


Fig. 22. Tone drawing of handbag and clothes-brush.

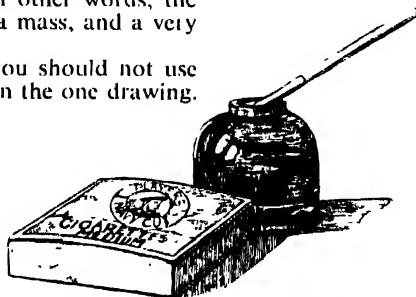


Fig. 24. Pen-and-ink drawing emphasises surface contrasts.

inch of the edge of the paper all round, and draw in full tone everything that comes naturally within that border, right up to the ruled lines.

This gives you a definite limit to your picture and also provides you with a neat frame that will show off your work to advantage.

Fig. 23 was drawn with black chalk of two degrees of hardness. On the whole, chalk gives less definition but a fuller range of tone. Some artists like to use, in combination with chalk, a thing called a "stump," which is a closely pressed roll of paper coming to a soft, stumpy point. Its purpose is to soften the gradations. It was so used here for the inside of the lid of the paint-box. But the stump is rather out of favour now, and was always a dangerous tool in the hands of a student.

Pen-and-Ink for Precision

Next try a tone drawing of a simple group in pen-and-ink, on white paper or board, Fig. 24. Basic proportions and perspective must be carefully estimated and can be very lightly drawn in pencil. Do not prepare any sort of complete or elaborate pencil drawing, or you will be tempted merely to *trace* that drawing with the pen, rather than draw with the pen direct from the model, and the result will be a very tame affair. All gradations of tone are produced by hatching: reserve solid blacks only for the very darkest dark patches. You are bound to make mistakes to begin with, and there is no means of erasing them. Drawing in pen-and-ink can therefore be a severe discipline, but it is well worth persevering with for that very reason. It encourages—indeed, it enforces—precision of statement. Having made up your mind where each stroke of the pen is to go, try to use the pen ever more boldly and freely.

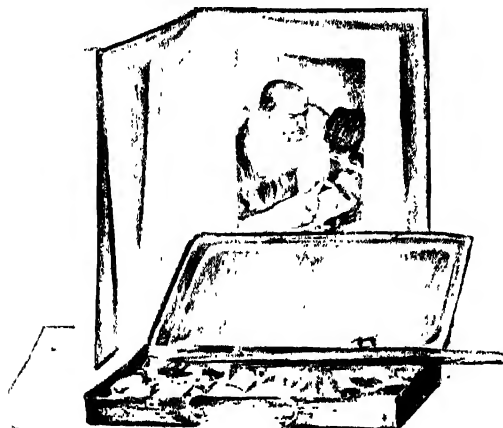


Fig. 23. Drawing in black chalk shows contrast in light and shade.

Remember to reserve your solid masses of ink exclusively for the very darkest spots of tone, the rest of the tone consisting of "hatching" of varying degrees of heaviness or lightness. Remember, too, that everything is lighter in tone than you may think at first. It is far better to err on the light side than on the dark side. In fact, as you gain confidence, you are likely to discover that you will achieve the desired effect with less and less shading; and you can apply this discovery to your pencil drawing, too.

Studies in Monochrome

Fig. 25 shows a study in monochrome water-colour. The choice of objects offered plenty of contrast in character—shape and texture and surface quality—as well as in tone. The colour chosen was a warm sepia, but ivory black would have done equally well. Such exercises form an invaluable preparation for work in colour. All the great masters made studies in monochrome, and many of the world's finest paintings were made on a monochrome foundation.

If the water-colour medium is new to you, try your hand first of all at laying one or two flat washes of colour. Rule several squares on your paper and try to fill them exactly, right up to each edge, with perfectly flat, even washes. You will not find it easy; that is why *several* separate squares are suggested. A good size to begin with is four inches by four inches, but this should be gradually increased.

Mix plenty of rich colour in your palette. If you run short of colour in the middle of the wash and have to re-mix, you run two risks: you may get a different strength of colour, and your unfinished wash may dry while you are re-mixing.

A common fault is not to take up sufficient colour in the hairs of your brush at one dip, i.e. to use too dry a brush. There is no merit in being economical with water-colour: water, at least, is cheap and plentiful. On the other hand, if you pick up too much colour, you will "blob." The brush should never be so laden that you cannot bring it to a point. The state of the brush after every dip should be such that when you make a stroke with it on slightly tilted paper a firm moist line of darker colour should appear along the bottom edge of the stroke, ready to be merged happily with the next stroke when it is laid immediately below it.

Start filling your square from the top, and work downwards in broadly horizontal strokes, ensuring that there is always that full moist line at the bottom of your wash as far as you have gone. The moment your brush gives any sign of drying—or even before that—re-charge it quickly from your palette. *Keep it moist.* Remember that as soon as any colour leaves the brush for the paper, the brush has so much the less colour and moisture left in it.

Moreover, as soon as the colour is on the paper, it begins to dry, and must be left undisturbed, so that it dries evenly. Never touch again with the brush any part of your square where the paint has begun to dry, or you will remove some of the colour irretrievably and your wash will become blotchy. Of course, as you approach the bottom edge of your square, you will require a less full brush, as there will be no need to retain the moist edge. You will soon judge from experience the exact amount needed to complete a wash, but any superfluous colour at the end can be absorbed by a dry brush, or the edge of blotting paper.

The wash, properly applied, will dry not only evenly but rather lighter in tone than it appeared when wet. When it is quite dry, but not before, you can add further washes or strokes as you please, though the brush should not be applied so heavily as to disturb the wash below.

Setting the "Tone Key"

After mastering the application of such washes to your own satisfaction, you are in a position to apply exactly the same principles to washes of any shape and strength of tone, and therefore to the drawing in monochrome washes of common objects, as in Fig. 25.

When putting in the main washes of a group of objects, it is advisable to begin with the darker washes, and allow them all to dry before proceeding. They set the "tone key" for the rest. Moreover you can superimpose and overlap light washes or dark patches more happily than vice-versa.

For smaller patches and spots of dark tone, which are the last things to be added, and for all detailed work, you will need to use finer brushes—and, of course, stronger, i.e. less watery, colour—but charge even your finest brush with



Fig. 25. Monochrome study with sepia water-colour.

plenty of colour. If you do no more than dip the very tip of the brush into the colour, your work will become niggling and timid. When applying even the thinnest line with a brush you should be able to feel the colour flowing easily and freely from it, without extra pressure on your part.

To obtain a soft gradation from dark to light, e.g. at the very edge of a soft patch of dark in a soft material like leather, or on any curving surface, a good method is to let the edge of your

dark become almost, but not quite, dry, then take along the edge a brush charged with clean water until the required softness is reached. Judicious use of clean rag or blotting paper will help here.

There is no doubt whatever that after your initial exercises with pen-and-ink and monochrome washes you will return to your pencil with relief—and with confidence all the greater for the discipline the other two mediums have demanded.

LESSON 5

Drawing from Plant Forms

DRAWING from plant forms is not only an important branch of training, particularly to those students who intend to become professional designers for textiles, wallpapers, carpets, and such crafts, but also a delightful means of having one's eyes opened anew to the wonder and beauty of nature. Careful drawings might well be made of every flower that comes your way, and the drawings saved and put by for future reference. Though many excellent books of studies in floral form have been published, most of them finely illustrated, your own drawings will always have a more personal and direct touch. Besides, it is good to have one's own work to rely on.

Take the flower, leaf, or any other botanical object that may appeal to you, place it in a good light with a plain background that helps to

define the subject—a sheet of white paper pinned on a board is best—and set to work.

First study the swing of the main lines of stalk, leaves, and flowers, then put down a few expressive lines; in other words, suggest the character of the growth. Even this bare "skeleton" should give a definite idea of the type of plant you are drawing, the sharp pointed characteristics of furze and holly, or the tenuous growth of vine, honeysuckle, ivy, and clematis.

Some studies in lead pencil drawn with H and HB, with a B for accents, are seen in Fig. 26. The sprig of sycamore leaves shows how such a drawing should be laid in. There you will see the method of nature's design, a fact that will be appreciated later on when you begin your own designs. Lightly space out your shapes and spaces and get the direction of the growth

Then, and not till then, proceed with the elaborations. You will note that the diagram shows new growth and the old stem.

The little sketch of the cornflower (Fig. 26) is the sort of drawing that may later be used for decorative purposes.

Brush Work

The next set of drawings (Fig. 27) was made entirely by the brush, charged with warm sepia. Such studies as these are sound training in every way, and many should be made and filed for future use and reference.

Follow the same procedure as recommended before. Get the main masses and proportion suggested in light pencil lines, then begin straight in with the brush. A fine brush was used for these, of necessity one with a good point.

The young beech leaves (Fig. 27) made an excellent study. All tree growth is wonderful, and studies should be made of many varieties, such as the oak, willow, ash, and horse-chestnut, in both monochrome and colour. Note in the thin stalks how the direction changes after each

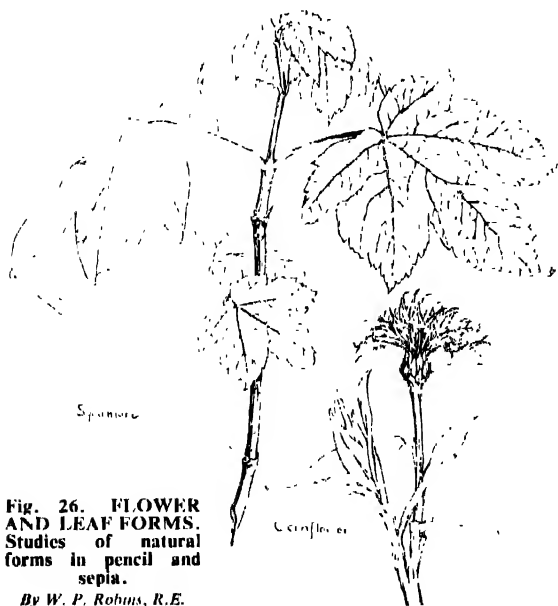


Fig. 26. FLOWER AND LEAF FORMS. Studies of natural forms in pencil and sepia.

By W. P. Robins, R.E.

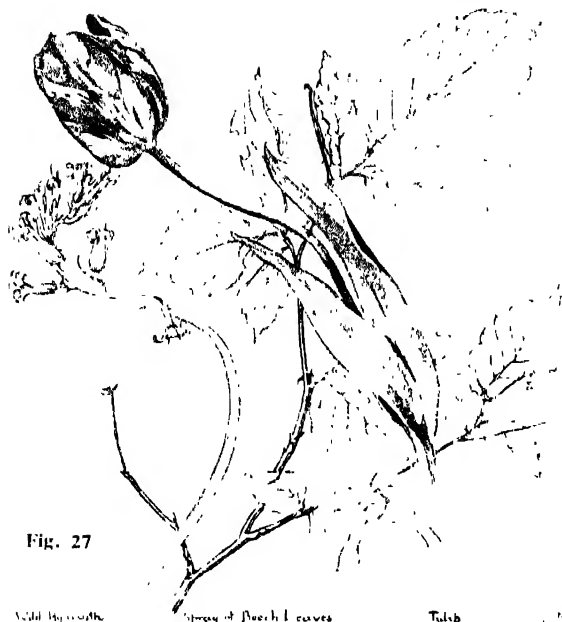


Fig. 27

shoot of leaves, and the delicate spread of the veins of the new pale green leaves.

Fig. 27 also includes a gorgeous striped tulip with its broad leaves following the swing of the stalk, not projecting as many other leaves do. In the same drawing is a bluebell or wild hyacinth, a flower whose grace and lovely colour have been the inspiration of many designers

Do not confine your studies to spring and summer plants, for with the autumn come fruits, both wild and cultivated. All these should be drawn, and do not neglect to study the bare twigs when all growth is stilled and only the dormant buds left. The lines of the past summer's growth are well worth study.

Character of Outline

Some pen drawings of various types of flower, cultivated and wild, are reproduced in Fig. 28. A crow-quill steel pen-nib was used throughout. A few pencil lines only were used to begin the drawings.

Note that all these drawings rely almost exclusively on outline. But the outline varies in character. It is sometimes firm and strong, sometimes light and even broken. There should be some difference in "quality" between lines that represent real edges, like

the edge of a leaf or petal (or a piece of paper), and those representing the fold or curve-away of a leaf or petal (or piece of paper). The lines representing the cylindrical stem, for example, are not real edge lines: they are curving away from you, like miniature horizons, and therefore could be given a softer, less firm quality. This distinction will help greatly in clarifying your representation of what you see.

At the top of Fig. 28 is a study of a marigold. The two flowers are drawn in positions that give the drawings possibilities for future use in design - a fact that always should be borne in mind.

Now notice the difference in the growth of the forget-me-not, with its flowers of pentagon shape, delicate stalks, and bell-like buds.

A drawing of the little rock plant—rock phlox—is included. This tiny flower has a charming trumpet-like side view and the grouping of the open flowers suggests great possibilities for design.

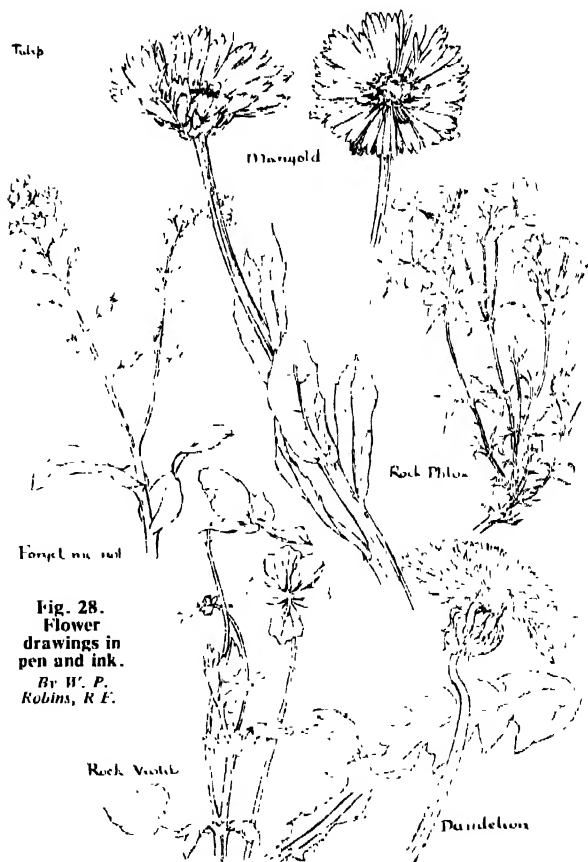


Fig. 28.
Flower
drawings in
pen and ink.
By W. P.
Robins, R. E.

At the bottom of the drawings in Fig. 28 are two contrasting flowers, a small dark purple viola and the wild dandelion. The latter flower has been much used by designers, for it has great decorative charm. Adaptions and designs based on these flowers are discussed in a

later Lesson. Meanwhile, apart from all other considerations, it cannot be too strongly stressed that in the close, detailed, personal study and interpretation of these glories of nature lies an inexhaustible store of pleasure and profit.

LESSON 6

Still-Life Painting in Colour

THIS fascinating branch of art has interested many of the most famous painters. Velazquez based all his early training on still-life painting, while Chardin, the French master, painted masterpieces from the simplest of everyday subjects. He realized the beauty that is to be found in the play of light on a variety of objects, their surface, texture, and solidity.

You will need some stretched or mounted paper. Ordinary unstretched paper will ruck up, because of uneven damping by the wet brushes, and the colours will run in unexpected and unwanted colours.

Paper and Brushes

To stretch your paper, use gummed brown paper at least one inch wide. It is far more efficient and handy than paste, and it keeps in good condition for years. Damp the paper evenly on both sides. Lay the reverse side on your drawing-board, and place the gummed paper, well damped, along the edges, with half its width on the board. Then gently press along the edges, over both board and paper. The paper should dry as tight as a drum, and will never "cockle."

Sable brushes, of various sizes, are desirable. A large brush of camel hair will serve for large flat washes, though the more expensive sables are much better in every way. A medium sable is necessary for general work, while a smaller brush is the tool for such finely drawn touches as may be wanted. Keep a sponge near at hand for any wholesale washing off which may become necessary. Some blotting paper and clean rag are also desirable.

Colours in Tubes and Pans

The choice of colour-box needs a little thought and careful selection. Some artists swear by colours in tubes made in several sizes. If you decide to use these tubes, you can get a thin box which is mainly a palette, and squeeze out the colours in small quantities, as needed, on the inside of the box. Other painters prefer the colours prepared for use in china pans. These need a deeper box. Colours have a tendency to run together if your box is

allowed to get too wet, and care should always be taken to clean and dry the lid and inside leaf before closing and putting away. Which-ever you decide to use, see that your colours are always arranged in the same order, so that in time you will not need to look for a colour—your hand will go instinctively to it. A good arrangement of colours is shown below.

Yellows		Reds		Browns		Blues		Blacks	
Y O	Am	L R	R M	Burnt Sienna	Cobalt	Ultra.	B Black	Warm Sepia	
Yellow Ochre	Aureolin	Lt. Red	Rose Madder	Burnt Sienna	Cobalt Ultramarine		Blue Black	Warm Sepia	

When, as you certainly will, you add to your palette, place your new colour among its relatives. Vermilion should go between light red and rose madder, a cadmium between yellow ochre and aureolin, greens between browns and blues. Never get a jumbled mess in your box—it will inevitably find its way on to your paper.

High Light and Main Tones

Start with a simple group, e.g. a white jug with a blue band, an egg in a nursery egg-cup, a brown loaf, a white-handled knife, and a striped red tablecloth. (See Colour Plate facing p 2613.) Draw your group in light pencil outline, taking every care to get correct proportion and placing and perspective. A slovenly drawing will handicap you greatly and often bring disaster. This group will combine some problems that will teach much in the solving.

First bring your knowledge of tone to bear—you should have acquired this by your monochrome studies. Which is the darkest note? Which is the high light? What are the main tones? These are the questions you must ask yourself. Well, in this case the glitter on the knife is the high spot, the darkest note the side of the brown loaf in shadow. The main tones are, for the tablecloth, a mild red; for the loaf, a warm light brown; for the jug, a pure blue-grey.

Lay your colour on with a well-filled brush, neither too dry nor too full. Get direct touches that will give you the full strength you wish to obtain. Do not paddle about and put pallid wash on pallid wash, but start by mixing up a

tint that will give you, as nearly as you can gauge it, the red of the tablecloth. Rose madder and a little light red were used, and the stripes were left white. Then the light blue-grey distempered wall was washed in; a good-sized brush was used for this and the drawing turned sideways before the wash (cobalt blue with touch of blue-black) was started. Then the wide surface of the loaf was painted in, and for this a mixture of yellow ochre and light red was used. Next the egg-cup was tackled. Aureolin yellow gave the main tone and the light on the foot was left. Next a blue-grey tone was washed over the jug, and the reflected red from the tablecloth was noted and put in faintly. Now the egg needed a wash of light red with just a touch of rose madder. The knife was then attacked, the blade with a blue-black mixed with a little cobalt, and the handle plain yellow ochre.

Now for details. The blue band of the jug, cobalt blue, was put at the same strength right round the jug and left to dry. When dry, the lights were washed out and blotted, thus giving a translucent effect. Then the shade and shadows on egg, egg-cup, and loaf were put in, and the light grey-blue on the stripes of the cloth reduced the glaring white that put the high lights out of tone.

Follow this example with any group that attracts you by its colour or variety of surface. Always try to get a good design in your grouping and try a variety of background and flat surfaces. If you look around in your home, you will find endless subjects at hand. When you become more advanced, add to your difficulties by putting a mirror in your group and study reflections. These are fascinating, and are the cause of much tribulation—and sometimes jubilation, when the problem is solved.

A few suggestions are offered.

A scrubbed table, with two large onions and a blue enamel saucepan on it, with a knife placed across in front of the onions. Background, a check red and white curtain.

A white enamelled flour-bin, a tin castor in front, a piece of butter on a plate, all placed before a pale yellow wall.

A dustpan and brush with a duster of bright blue.

A pair of shoes, black or brown, makes an excellent study. A glazed teapot is full of absorbing problems. Later, a group with silver objects might be attempted.

Try some studies of flowers in vases. Begin with some simple arrangements of just a few blooms—some tulips, for instance; these are admirable in colour and shape.

LESSON 7

First Principles of Perspective

THE general effects of perspective have already been discussed (Lesson 3). We now pass to the more exact implications of its principles when considered scientifically and expressed mathematically rather than by a mere personal observation. A grasp of these principles and a few exercises in their application have always been considered a necessary part of the artist's professional training and are of the greatest benefit to the amateur who seeks

intelligent understanding of what he observes.

Perspective is the art of drawing upon a plane surface the representation of objects when viewed from a fixed point. Figs. 29 and 30 represent as simply as possible two problems of practical perspective. The one shows a railway passing out of sight in a straight level line; the other, a road vanishing into distance over undulating country. The literal meaning of perspective is "looking through," because

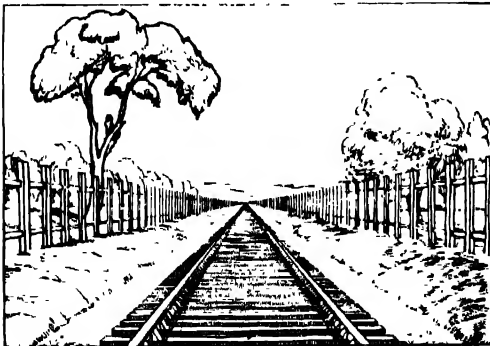
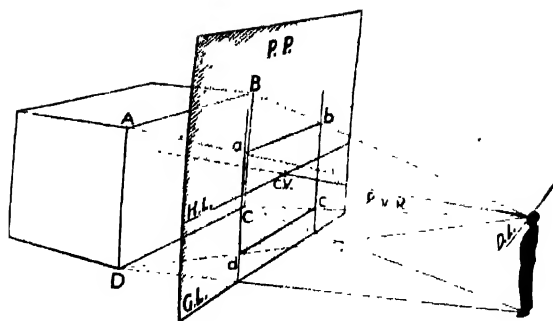


Fig. 29



Fig. 30



the spectator is supposed to be looking through a transparent piece of glass (Fig. 31).

Linear perspective, or representation by means of outlines only, is discussed first. The planes used and the perspective of shadows are dealt with in Lessons 9 and 10.

The following abbreviations are those customarily used.

Points

E	Eye.
C.V. or C.F.V.	Centre of Vision, or Centre of Field of Vision.
D.P. or P.D.	Distance Point, or Point of Distance.
V.P.	Vanishing Point of Lines
A.V.P.	Accidental Vanishing Point of Lines
M.P.	Measuring Point
C.V.L.	Centre of Vanishing Line.
S.	Sun.
A.L.	Artificial Light.
R.S.	Point of Radiation of Shadows
V.P.S.R.	Vanishing Point of Sun's Rays
V.P.S. or V.S.	Vanishing Point of Shadow
V.P.R.	Vanishing Point of Reflection

Lines

P.V.R.	Principal Visual Ray, or Line of Direction.
D.L.	Directing Line.
H.L.	Horizontal Line, or Eye Level
G.L.	Ground Line.
V.L.	Vanishing Line of Planes
V.Par.	Vanishing Parallel.
V.L.P.S.	Vanishing Line of Plane of Shade
H.L.	Height Line
I.L.	Intersecting Line
F.P.L.	Floating Picture Line.
H.T.	Horizontal Trace

Planes

P.P.	Picture Plane.
G.P.	Ground Plane.
R.S.	Reflecting Surface.

The *picture plane* is a transparent plane standing in a vertical position somewhere between the spectator and the objects to be represented. It is upon this plane that the drawing is imagined to be made, as in Figs. 31 and 32. The paper or canvas on which an artist makes his drawing is supposed to be the picture plane (P.P.).

The *ground plane* is the horizontal surface level with the spectator's feet, and is at right angles to the P.P. (Fig. 32). Objects may rest upon, or they may be above or below, the G.P.

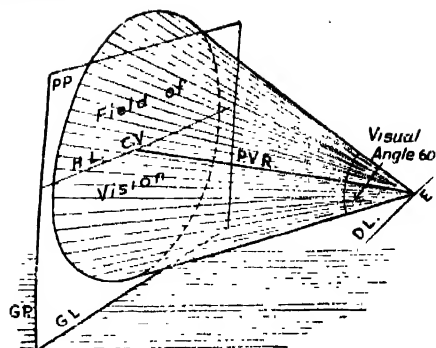


Fig. 31 (left). Diagram showing principles of linear perspective.

Fig. 32 (right). Field of vision and visual angle.

Field of Vision

A new picture is seen at every movement of the eye; therefore, for any one picture, the eye is assumed to be fixed in position, looking straight forward at right angles to the P.P. The *field of vision* is a space bounded by a circle, which is the base of a cone of rays of light coming from the object and converging in the eye (the apex of the cone). The solid angle at this apex is called the *visual angle*, and is generally allowed to be 60° (Fig. 32), but it must be remembered that we do not see distinctly all over such a large field of vision, for objects coming just within the circumference of the field of vision are seen only vaguely. We do not see distinctly outside a visual angle of 25° or 30°.

The line from the eye to the centre of the field of vision is the middle ray of the cone of rays, and is called the *principal visual ray* or *line of direction* (P.V.R.).

As a useful experiment, set up vertically a piece of glass, and behind it place a small rectangular box. Close one eye, and keep the other in a fixed position; then, with a piece of soap or damp chalk, carefully trace upon the

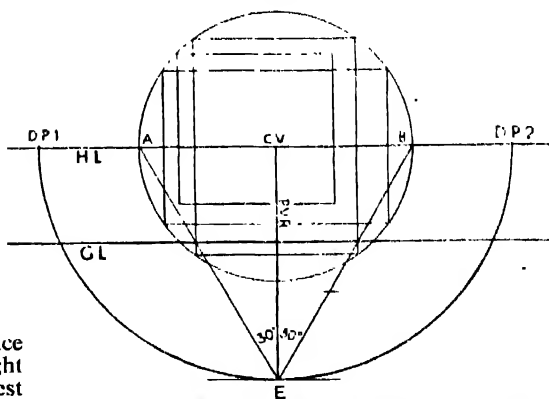


Fig. 33. Preparation of diagram of the picture plane.

glass (P.P.) some lines which obscure or seem to coincide with the edges of the box. The drawing will then be an accurate perspective representation of the object. Notice that there is correct foreshortening and proper convergence in those lines which represent the receding parallel edges of the box. The latter lines, if produced, meet at the *vanishing point* (V.P.).

Three Laws of Perspective

Thus we deduce these laws of perspective :

1. Receding parallel straight edges appear to converge towards the same point. If the box is placed so that some receding parallel edges are at right angles to the P.P., they vanish to the C.V.

2. Edges at right angles to the P.P. appear to vanish to the C.V.

3. Parallel edges which are also parallel to the P.P. do not appear to converge, but remain parallel in appearance.

If this experiment is made at a window from which can be seen the distant horizon of the sea or of a level stretch of country, and if a line is drawn on the P.P. to represent the distant horizon, this line will be exactly on the level of the spectator's eye, and therefore is called the *horizontal line* (H.L.), or *eye level*. Those receding parallel edges which are also parallel to the ground plane (G.P.) have their V.P. somewhere on the H.L., but those which are not parallel to the G.P. appear to vanish to some point which is either above or below the H.L.

Perspective and Optics

All objects are seen by means of rays of light reflected straight to the eye from every point in the surfaces of the objects. A picture is thus formed on the retina, as though with a camera, the eye being the lens, and the retina representing the glass plane upon which the picture is projected.

Fig. 31 explains how the picture may be projected on the P.P. $ABCD$ is a square standing upright on the G.P., P.P. is the picture plane, and E. is the position of the spectator's eye. Rays of light are reflected from each of the four corners A, B, C, D , and travel straight to the E. Each of these rays intersects the P.P. at the points a, b, c, d , respectively. Join these points by lines, and $abcd$ is the representation on the P.P. of the square $ABCD$.

We now come to the preparation of the diagram of the picture plane. The diagram is usually drawn to some scale, such as 1" to 1', or $\frac{1}{2}$ " to 1', or $\frac{3}{4}$ " to 1'. A very convenient scale is $\frac{1}{8}$ " to 1', but the figures herewith are necessarily drawn to a smaller scale. The student is advised to use a larger scale when working out the problems.

At a convenient distance (say, 5 in.) from the top edge, draw a horizontal line right across the

paper (Fig. 33), to represent the H.L.; then another horizontal line, say 5' (at scale of $\frac{1}{2}$ " to 1'), below the H.L. This distance of 5' is generally used, because it is the average height of a person's eye above the ground if he is standing, but any height may be taken. Thus it may be 3' 6" if the person is seated. This second line represents the G.L. On the H.L. choose some convenient position for the C.V.; from it draw a line at right angles to H.L. (either above or below H.L.), to represent the P.V.R., and make its length equal to whatever distance the observer is supposed to be in front of the P.P. (say 12'). A third short horizontal line is drawn through the E. to represent the directing line.

Conventional Arrangement

As the eye is really away in front of the P.P., it is impossible to show its actual position on the same piece of paper which represents the P.P. Therefore, a conventional arrangement is used; that is, the P.V.R. with the E. and the directing line are swung into the plane of the picture, either downwards or upwards (Fig. 34). The P.V.R. is supposed to be hinged at C.V. This swinging into the plane of the picture makes no difference whatever to the correct use of the principles of perspective. Then mark on the H.L. the positions of the distance points, D.P.1 and D.P.2, at the same distance from the C.V. as the C.V. is from the E. (in this case 12'). A semicircle is usually drawn (Fig. 35), to indicate how the distance points are obtained. They are really measuring points, by means of which lengths may be measured on lines which vanish at 90° with the P.P.

As the P.P. and G.P. cannot be indicated separately in Fig. 33, the student must remember that all the paper on which he works is the P.P., and that part of the G.P. which is in reality behind the P.P. and perpendicular to it is represented by the space between the H.L. and G.L.; that is to say, the last-mentioned space represents two things—first, the whole of the real G.P. (which may be miles in extent) from the P.P. to the true horizon and, second, part of the P.P.

Fixing the Limits

In order to fix the limits of the field of vision we will assume that the visual angle is allowed to be 60°, which, it must be remembered, is a solid angle, or cone, and has 30° of it all round the P.V.R. At the E., measure with a protractor an angle of 30° on either side of the P.V.R., and produce the line to the H.L. at either point A or B (Fig. 33). Then with C.V. as centre, and the distance from C.V. to A or B as radius, describe a circle, which is the limit of the field of vision (when, as noted above, the assumed visual angle is 60°).

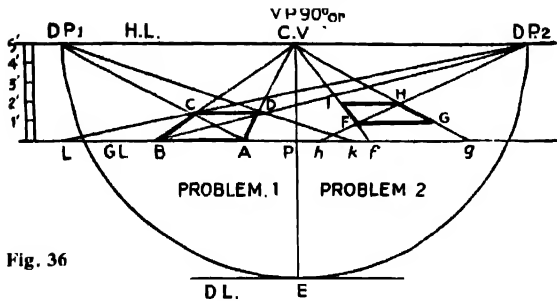


Fig. 36

to each other; therefore the sides AD and BC must vanish to the C.V. (or V.P. 90°) according to Law 2 (see Lesson 7, page 2597), so from A and B draw lines to the C.V. The apparent lengths of the sides AD and BC must now be determined. We say apparent lengths, because they will appear foreshortened. To obtain the correct foreshortening proceed as follows: From A (the near end of the line vanishing to C.V.) measure off $5'$ (the full scale length of the real edge AD) along the G.L., either to the right as Al , or to the left as AB ; from k draw a line to D.P. 1, or from B draw a line to D.P. 2; either of these lines cuts the one vanishing to C.V. at the point D , which is the farther right-hand corner of the square, and AD is the correct foreshortened length of the receding side. Through D draw CD parallel to the P.P. (Law 3), thus obtaining the other back corner of the square. Then $ABCD$ is the required perspective drawing of the square.

Other construction lines will be seen in the above problem to show that corner C might have been established before D —thus indicating that there are more ways than one of obtaining the correct result.

Now, why is it that the foreshortening comes right when we use the method just described? Geometry helps to prove it. If two lines AB and CD (Fig. 37) are at right angles to each other, and from C any length CE is measured along AB (either right or left), and from E a line at an angle of 45° is drawn to cut CD in F , then CF is equal to CE . This is just what has been done in perspective, for the G.L. in Problem 1 corresponds to AB in Fig. 37, and the line from A to the C.V. (Prob. 1) represents CD (Fig. 37). Also, the length AK (Prob. 1) is measured along the G.L. as CL (Fig. 37) is measured along AB .

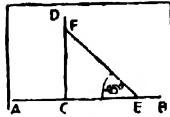


Fig. 37

Problem 2 (Fig. 36). Give the perspective representation of a square with 5' sides lying on the G.P. with one edge parallel to the P.P., and the nearest corner $4'$ to the right and $3'$ behind the P.P.

From P measure along the G.L. $4'$ to the right to obtain point f , and $5'$ more to obtain point g ; from f and g draw lines to the C.V. (Laws 1 and 2); then the nearest corner is somewhere along the line from f to C.V. From f measure $3'$ (the full scale length that F is behind the P.P.) to point h , and from h draw a line to D.P. 2 (which is the V.P. of all lines which recede at 45° with the P.P. towards the right), thus obtaining point F , which is the nearest corner of the square. Through F draw FG parallel to the P.P. The line drawn from h to D.P. 2 (or V.P. 45°) contains the diagonal hH of the square $FGHI$, because the diagonal of a square always makes an angle of 45° with the sides, so H is the back right-hand corner of the square; then draw HI parallel to the P.P., and the resulting $FGHI$ is the square required.

Problem 3 (Fig. 38). This problem concerns measurement of lines parallel to P.P. Thus, given AB parallel to P.P., it is required to measure

on it $6'$ from point A . From any point in H.L. (say, the C.V., which is generally used), draw a line through A to meet the G.L. in C .

From C measure $6'$ along the G.L. in same direction as AB , to D . From D draw a line to C.V., cutting AB in E ; then AE is the required perspective length of $6'$. The lines FG and HI are of no fixed length, and are parallel to P.P. It will be seen that the receding lines to C.V. have cut off equal portions of $6'$ length.

If the parallel lines are also upright, then their height or length can be measured by means of a height line (Ht.L.) or I.L. The height line is a vertical line drawn on the P.P. for the purpose of measuring the lengths of upright lines. It should be noted that the Ht.L. is really a part of a greater line, called the intersecting line (I.L.), which is the intersection of any plane (in this case it happens to be a vertical plane) with the P.P.

Problem 4 (Fig. 38). Give the perspective representation of a cube of $4'$ edges standing on the G.P. with one face parallel to P.P. and nearest corner $2'$ to the right of the spectator and $3'$ behind the P.P. E is $5'$ above G.P. and $12'$ in front of P.P.; scale $\frac{1}{2}$ to $1'$.

Find the nearest corner A , $2'$ to the right and $3'$ behind P.P., and complete the base $AFC D$ (as in Problem 2). Through B draw a vertical line for the Ht.L. or I.L. of the vertical plane which contains the right-hand face of the cube. Set off bf equal to $4'$; from f draw a line to C.V. It should be noted that the latter line to C.V. really represents a line suspended in space vertically over and parallel to the line from b to C.V., and all vertical lines between them are equal to one another in height, in this case, $4'$. Draw the vertical BI , through F draw IE parallel to both the ground and P.P. to meet the vertical AE from A . This completes the front face. Draw from E to C.V., and the vertical lines from D and C to meet the lines from F and E to C.V. in the points of G and H respectively. Put dotted lines for the invisible edges if the object be opaque. The Ht.L. or I.L. (at point a) of the vertical plane containing the left-hand face could have been used instead.

A vertical line may be measured by means of any vertical plane which contains the line.

The Floating Picture Line (F.P.L.) is useful, because sometimes it is required to measure the length of a line which is not in the G.P., but is in a plane parallel to G.P., either above or below it. In such cases the F.P.L. is used. This is a line drawn horizontally on the P.P., and really represents the I.L. of the horizontal plane which contains the line to be measured.

Problem 5. To measure the height of the line AB (Fig. 39). A vertical plane containing it and vanishing to V.P. 45° to the left, with its I.L. at point a , could be used thus: From V.P. 45° draw a line through A to meet the G.L. at a , from which point set up the height (say, $6'$) of AB on the Ht.L. or I.L., and from b draw another line to V.P. 45° , then AB is the height required.

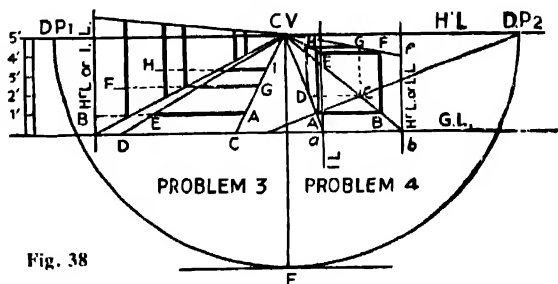


Fig. 38

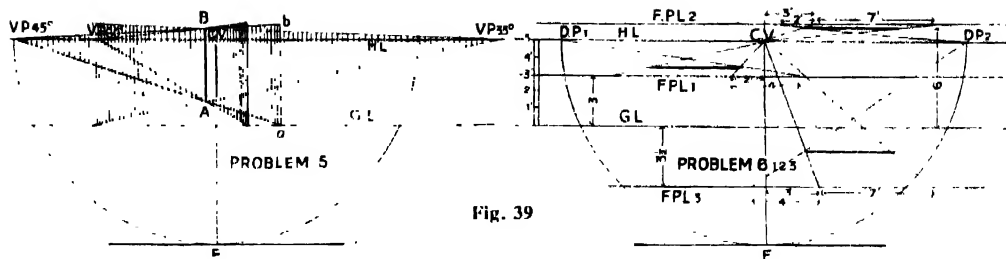


Fig. 39

The I.L. of other vertical planes which contain AB , and which vanish to V.P. 60° or 35° , etc., might be used, as shown in the diagram.

Problem 6. To draw a line 7' long parallel to the G.P. and P.P.:

- (1) 3' above G.P. with its nearer end 2' to the left and 4' behind P.P.
- (2) 6' above G.P. with its nearer end 2' to the right and 3' behind P.P.
- (3) 3½' below G.P. with its nearer end 3' to the right and 4' behind P.P.

To solve (1), draw the F.P.L. horizontally and 3' above the G.L. and use it for measurement just in the same way as if it were the G.L., because the F.P.L. and G.L. are both lines on the P.P. where full-scale measurements may always be made. The F.P.L. and G.L. are also alike, for they are both intersecting lines (with the P.P.) of horizontal planes.

The method of solving (2) and (3) will be easily understood on reference to the working in (1).

Problem 7. This problem (Fig. 40) concerns the representation of circles in perspective.

- (1) Draw in perspective a circle 6' in diameter lying on the G.P. with the nearest point in its circumference 4' to the left and 2' behind the P.P. Scale, etc., as in the previous problems.
- (2) The same circle standing in a vertical plane perpendicular to P.P. with the nearest point in its circumference 5' to the right and 1' behind the P.P.
- (3) The same circle in a vertical plane parallel to P.P. and touching the ground at a point 4' to the left and 8' behind P.P.

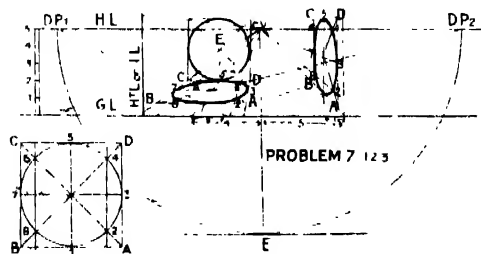
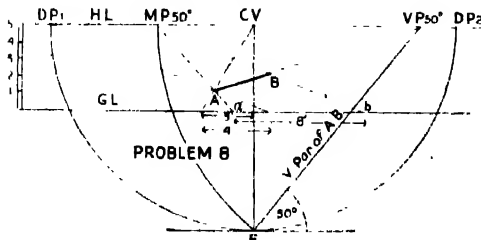


Fig. 40



To solve (1), first describe a circle, 3' radius, and around it draw a square with its two diagonals and two diameters; also, two other construction lines passing through the points 2, 4, 6, 8, where the diagonals cut the circumference. The last two construction lines may be drawn either vertically or horizontally, according to convenience.

Then put this square, etc., into perspective as usual, and through the points 1 to 8 draw a curve freehand, to represent the appearance of the circle as shown.

To solve (2), put the same skeleton square, etc., into perspective in a vertical position, and draw the ellipse through the discovered points 1 to 8.

To solve (3), as the back edge of the square in case (1) is 8' behind the P.P., upon it erect a square, draw its two diagonals. Where they intersect is the centre of the circle whose radius (perspective) is equal to 1.5. It will be seen that the perspective shape is this time a circle, because it is in a plane parallel to P.P.

NOTE. Any figure appears its same shape, but not the same size, when it is in a plane parallel to the P.P. Other irregular curves may be put into perspective in the same manner as shown in this problem if a scaffolding of straight lines be first drawn around the curved shape, care being taken to put two straight lines through each chosen point in the curve, and then to draw the scaffolding in perspective.

Problem 8. This problem (Fig. 40), shows the method of measuring lines inclined at an angle to the P.P. Find a point A 3' to the left of the spectator and 4' behind the P.P. From it draw a line 8' long, vanishing to the right at 50° with the P.P. E., etc., as in preceding problems. Find point A as usual. Then, because the line AB is to vanish to the right at 50° with P.P., we must find its V.P. by measuring at the E an angle of 50° with the directing line, and draw the V. Par. to meet H.L. at V.P. 50° . From A draw a line to V.P. 50° . To measure on this line the perspective length of 8', find the M.P. of V.P. 50° by taking V.P. 50° as centre and distance to E. as radius, and mark it off on H.L. at M.P. 50° . From M.P. 50° draw a line through A until it meets the P.P. in the G.L. at point a , from which measure full-scale length of AB (8') to point b . From b draw a line to M.P. 50° , cutting the line (from A to V.P. 50°) at point B . Then AB is required perspective length.

NOTE. The length of AB cannot be made direct from A , because the line is behind the P.P. and so will be foreshortened, and the student must always draw a line first from the proper M.P. through the point A (or any similar starting-point) to find a point on the G.L., or F.P.L., or I.L. (which are all on P.P.), such as point a in this problem, from which to make the full-scale measurement to b , and then draw another line back to the M.P. to find where it cuts the line on which the perspective length is required.

Prisms and Cylinders

We now come to problems in the perspective of prisms and cylinders, in other words, the representation of solids.

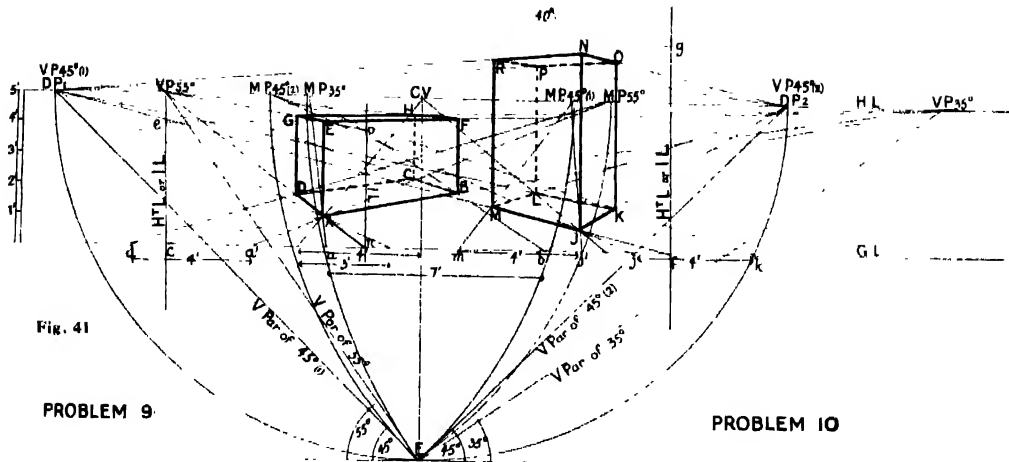


FIG. 41

PROBLEM 9

PROBLEM 10

Problem 9. Give the perspective representation of a square prism 7' long and 4' square at ends lying on the G.P. on one of its oblong surfaces, with the square ends receding to the left at 55° with P.P. (Fig. 41). The nearest corner on G.P. is 4' to the left and 3' behind P.P. The plan—which is put into perspective first—is an oblong.

The first step is to measure the height of the vertical line AE . To do this, take the vertical plane, which contains not only AE but also the oblong surface $ABFL$, and will give the height of BF at the same time. Bring forward the line from V.P. 35° through B and A until it meets the P.P. on the G.L. at point c . Through c draw a vertical line to represent the I.L. or Ht.L. Upon the I.L. or Ht.L. measure 4' full scale height of AE from c to e . From e draw a line to V.P. 35°. You now have two lines parallel and vertically over each other, and any upright line between them is 4' high. From A draw AE , and from B draw BF to meet upper line. $ABFE$ is one vertical oblong face of the solid.

The remaining work practically obeys Law 1 (see Lesson 7, page 2597). So from E and F draw lines to V.P. 55°; then uprights from C and D to meet these lines at points H and G respectively. Join GH , which ought to vanish to V.P. 35°. Thicken the lines which represent the visible edges, and put dots for those which are invisible.

The height of AE could have been found by taking a vertical plane containing AE and the square end $AEGD$, and bringing forward the line from V.P. 55° through D and A to meet the G.L. at n , where the I.L. of this plane should be drawn, and 4' full scale measured on it from n to o . From o draw back to V.P. 55°, as shown in the drawing.

Problem 10. Take the same prism standing on the G.P. on one of its square ends, with a vertical oblong face receding to the right at 45° with P.P. (Fig. 41). The nearest corner on G.P. is 6' to the right of spectator and 2' behind P.P.

First complete the square base; then find an I.L. for the vertical plane containing the vertical JN . In 10 it will be seen that the I.L. or Ht.L. chosen is the one which belongs to the vertical plane containing not only JN but the vertical surface $JNRM$.

Problem 11. Give the perspective representation of a cylinder 12' long and 6' diameter (Fig. 42), lying on the G.P. with its axis receding to the left at 35° with the P.P. The nearest point touches the

P.P. 4' to the left. Scale, etc., are as in Problem 9.

First describe a circle of 3' radius, and draw the usual skeleton lines around it as shown here in Problem 11. Put this skeleton into perspective, so that the vertical plane containing the near end of cylinder vanishes to V.P. 55° (because the axis recedes to the left at 35° with the P.P.). The point A is 4' to the left, from which AB is drawn to V.P. 55°. Through A is drawn the I.L. (or height line), on which is measured the full-scale height of AD , in which is point 1, the nearest point touching the P.P. Draw the ellipse through points 1, 2, 3, 4, 5, 6, 7, and 8.

To obtain the farther end, from A draw a line to V.P. 35°, and on it measure the perspective length AA' (the length of the cylinder). At the farther end construct another skeleton square, etc., as shown. Draw the ellipse, and note that only four points are necessary through which to draw a good ellipse. The straight lines for top and bottom boundaries of the cylinder are drawn at a tangent to the curves of the ellipse, and not necessarily through the points 3 and 7.

Problem 12. A cylinder 10' long and 6' diameter standing on one of its ends, with nearest point 5' to the right, and 2' behind P.P. (Fig. 42).

First put the skeleton square, etc., into perspective, so that the nearest point 3 is 5' to the right and 2' behind the P.P. Draw the ellipse as shown. The method of obtaining the top end can be easily understood from the drawing. The height line is placed towards the right at I.L.

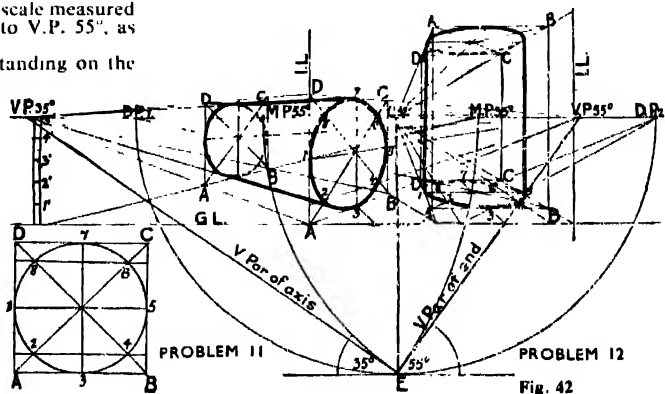


FIG. 42

LESSON 9

Plans and Elevations, Planes and Traces

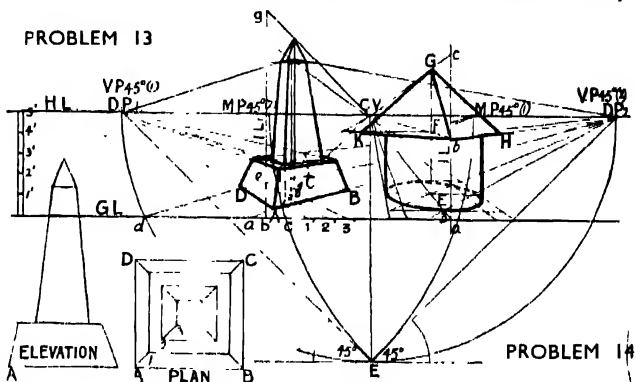
IN the direct method, or architect's perspective, no measuring points or distance points are required. It is called the direct method because lines (to represent rays of light) are drawn direct to the eye. The architect is able to make one plan do for any view he may wish to represent, whether it be a front, back, end, three-quarter, or other view, because he draws the plan on one piece of paper or on tracing cloth, which he can turn about for any view and the perspective drawing is made on another.

Problems 13 and 14 (Fig. 43) concern perspective representations of super-imposed objects. It is usual to put the plan into perspective first and then build up from it.

Problem 13. Draw in perspective the object of which the plan and elevation are given. The sides make equal angles with the P.P. The nearest corner is 5' to the left and 1' within the picture.

First find the nearest corner *A* in the usual way.

PROBLEM 13



PROBLEM 14

Fig. 43 Perspective problems of superimposed objects.

and complete the square base *ABCD*. Through *A* draw a diagonal to *C.V.* On this diagonal measure (by means of the *D.P.*) distances to find the points 1, 2, 3. Point 4 is found by drawing the horizontal diagonal through *D*. Now imagine a vertical plane to cut diagonally through *A* and *C*, and on its *I.L.* (used as *H.L.*) measure the respective heights of plinth, shaft, and top, from *b* to *c* for plinth, *e* to *f* for shaft, and *f* to *g* for top. From *e*, *f*, and *g* draw lines to *C.V.* Then vertical lines drawn from points 1, 2, and 3 to meet them will give the nearest corners of the different parts. The lengths of the sides which vanish 45° right and left are measured by merely drawing horizontal diagonals through the central points on the vertical axis of the objects, thus saving a good many construction lines.

Problem 14. Draw in perspective a cylinder with axis 4' long and diameter 6', standing on a circular

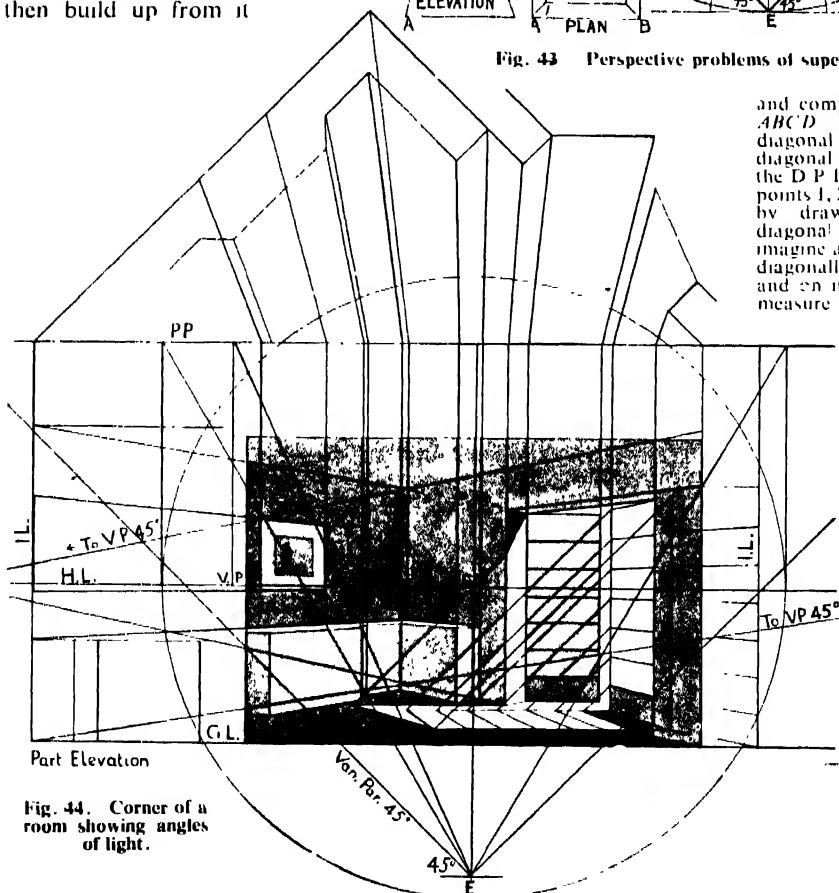


Fig. 44. Corner of a room showing angles of light.

end, with its centre 4' to the right and 4' within the picture (Fig. 43). On top of this, place centrally a square pyramid 4' high. Its sides make equal angles with P.P., and its nearest corner touches the P.P. Point 3 is 4' to the right and 1' behind the P.P., because the centre E is to be 4' behind the P.P., and the radius of the circle is 3'. Complete the lower end.

For a Ht.L. use the I.L. of the vertical plane passing through the axis of the two objects. From *a* measure *ab* on this I.L. for the height of cylinder; then *EF* is the apparent length of its axis, and point *F* is the centre of the upper end of the cylinder as well as the centre of the base of the pyramid. The upper ellipse is not shown in Fig. 43, in order to avoid confusion of lines; moreover, it would not be visible.

The line from C.V. through *F*, meeting I.L. in *b*, gives *b* as the nearest corner of the pyramid touching the P.P. From *b* draw lines to V.P. 45° (1) and (2). The horizontal diagonal through *F* cuts these lines at points *K* and *H*, which are two more corners of the base of the pyramid. On I.L. measure *bc* for the height of the pyramid. From *c* draw a line to C.V., cutting *EL* produced at *G*, the apex of the pyramid. Join *GK*, *Gh*, and *GH*, thus completing the pyramid. The back edges are not shown.

Worked-out Problems

The three following examples of worked-out problems will serve to give some idea of general methods, although some of the minor construction-lines have been omitted for the sake of clearness in following the main lines.

In order to keep the plan distinct from the finished picture, the Ground Line and Horizon Line have been dropped, together with all vanishing points, clear of the plan. Enough has been shown of elevations to give main heights; the plan explains the general arrangement.

In Fig. 44, showing a corner of a room, the sun's rays are parallel to the picture plane, coming from the right at 45° to the ground. This is so also in Fig. 45, but here there are

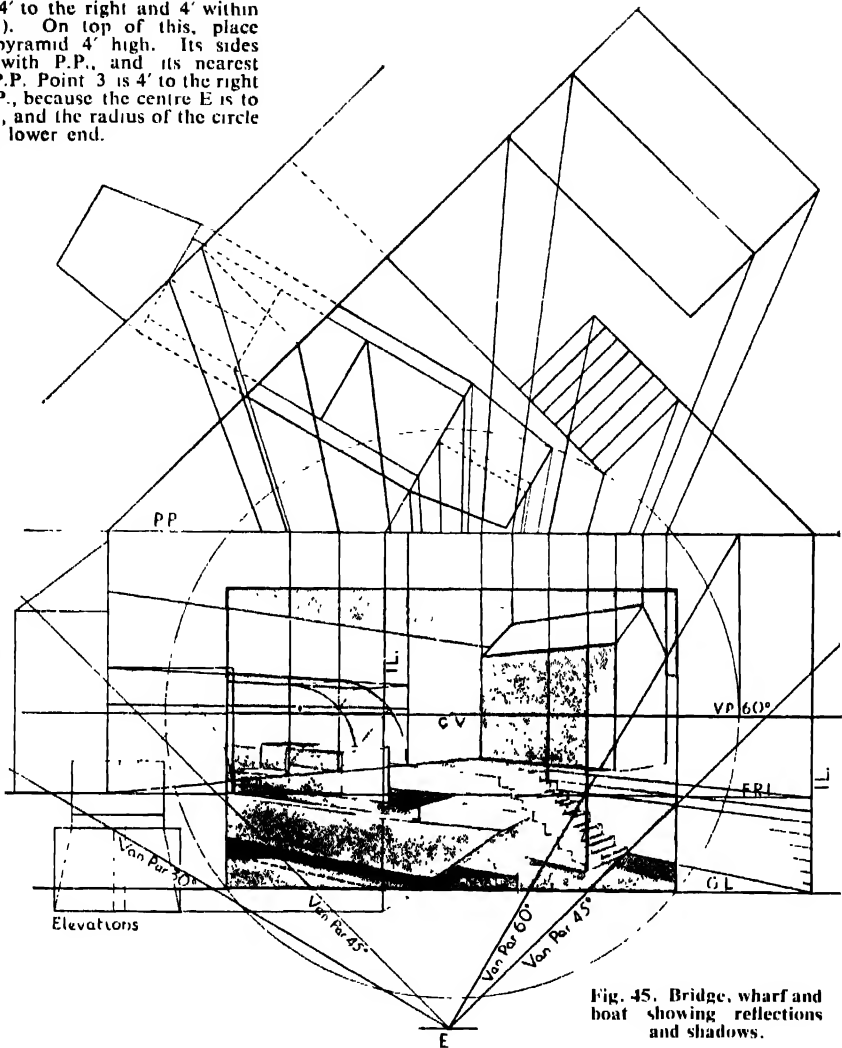


Fig. 45. Bridge, wharf and boat showing reflections and shadows.

reflections to be worked out, and the shadows of some objects fall over other objects. There are also two pairs of vanishing points, one pair for the architectural forms, another for the barge which is slewed out into the stream.

In Fig. 46, the sun is in the picture plane, i.e. at an angle both to the picture plane and ground plane, making the working a little more complicated. There is also a reflection of the blind and the window-frame in the glass of the shop-window. The reflection of the sand-bin on the pavement should show on the window, but has been left out for the sake of clearness.

It is suggested that similar problems to these should be made up and worked out, with varying positions of the eye and the sun.

The student must have noticed that all V.P.s used in the preceding problems were placed on the H.L., but sometimes the V.P. may come above or below the H.L. In such cases it is called an *accidental vanishing point* (A.V.P.).

It should be remembered that the only lines which have their V.P.s on the H.L. are those which recede and are in reality parallel to the G.P. All others have their V.P.s either above or below the H.L., but will always be on the V.L. of the plane which contains the receding line or lines.

Definitions of Planes

In order to know how to find and use these A.V.P.s, the student must first learn to distinguish the various kinds of planes used in perspective, and their relative positions with regard to the P.P. and G.P.

The planes are (i) Horizontal. (ii) Vertical—1, parallel to the P.P.; 2, perpendicular to the P.P.; and 3, inclined to the P.P. (iii) Inclined. (iv) Ascending and descending. (v) Oblique—1, ascending; and 2, descending.

(i) A horizontal plane is one which is parallel to the G.P.

(ii) A vertical plane is upright—that is, perpendicular to the G.P.—but it may also be either parallel to the P.P., as *ABCD* (Fig. 47), or perpendicular to the P.P., as *EFGH*, or inclined to the P.P., as *GJKL*.

(iii) An inclined plane is one which is inclined to the G.P., but is perpendicular to the P.P., as *ABCD* (Fig. 48).

This plane must be distinguished from a vertical inclined plane, which is perpendicular to the G.P., but inclined to the P.P. (Compare Figs 47 and 48.)

(iv) An ascending plane is one which goes directly upwards from the P.P., as *ABCD* (Fig. 49). A descending plane is one which goes directly downwards from the P.P., as *ABCD* (Fig. 50).

(v) An oblique plane is inclined to both the P.P. and G.P. It may be either oblique ascending, as *EFGH* (Fig. 51), or oblique descending, as *KLMN* (Fig. 52).

The intersection of any one of these planes with the G.P. is called its *horizontal trace* (H.T.), but its intersection with the P.P. is named its *vertical trace* (V.T.), or more generally, its *intersecting line* (I.L.). (See Figs. 47–52.)

(i) Prepare the diagram of the P.P., etc., and find the starting point. (ii) Find the H.T. of the plane in which the line lies. (iii) Find the V.L. and I.L. of the same plane. (iv) Find the C.V.L. and new representation of the E. (v) Find the A.V.P. and A.M.P. of

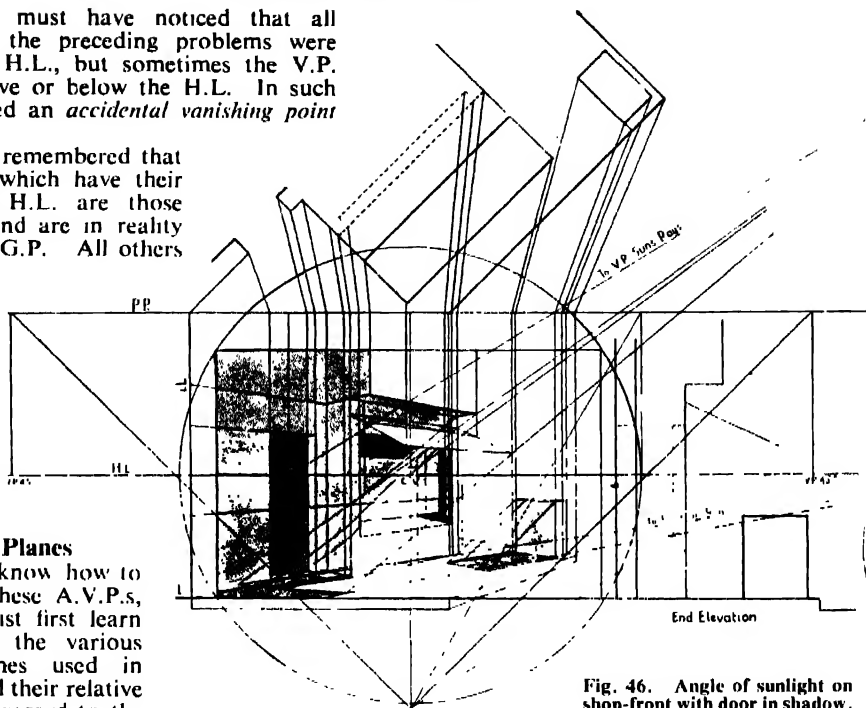


Fig. 46. Angle of sunlight on shop-front with door in shadow.

the line whose representation is required (vi) Draw and measure the said line.

NOTE: By the rules of geometry it is possible to prove that a vertical plane may always be found to contain any given straight line.

Problem in Vertical Planes

Give the perspective representation of a line *AB*, which is 9 feet long, lying in a vertical plane inclined at 50° to the left (Fig. 53). The line is inclined to the G.P. at an angle of 40° , and recedes upwards from a point *A* on the ground, 3' to the right, and 4' behind the P.P. The eye is 5' above the ground and 10' in front of the P.P. Scale, $\frac{1}{4}'' = 1'$.

NOTE: The plane which contains this line is similar to *GJKL* (Fig. 47).

(i) Prepare the diagram of the P.P., etc., and find point *A* on the G.P. as in elementary perspective.

(ii) Find the H.T. of the vertical plane. As the latter is inclined towards the left at 50° with the P.P., therefore its H.T. also recedes at 50° towards the left. At the E., measure the angle of 50° and draw the V.Par. of the H.T. to find V.P. 50° (V.P. of direction). Through *A* to V.P. 50° draw the H.T. (represented by a dot-and-dash line), and bring it forward to meet the G.L. at point *L*. It should be noticed that V.P. 50° is the farther end of the H.T. (and this end is in reality a great distance away—in fact, miles away on the horizon), while point *L* is its near end on the P.P.

(iii) Through V.P. 50° draw a vertical line to represent the V.L. of the vertical plane, and through *L* another vertical line to represent the I.L. of the vertical plane.

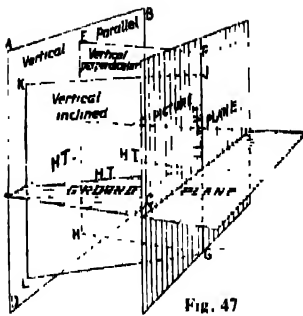


Fig. 47

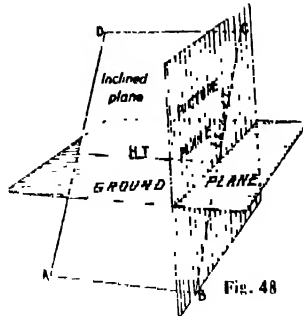


Fig. 48

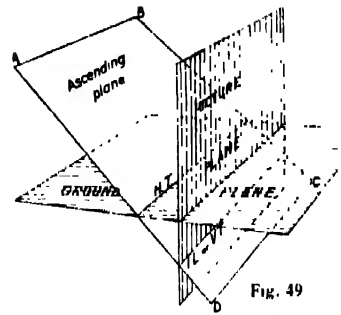


Fig. 49

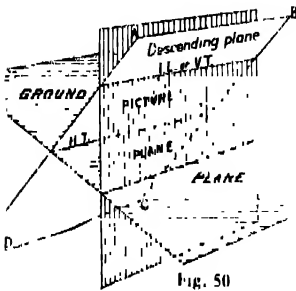


Fig. 50

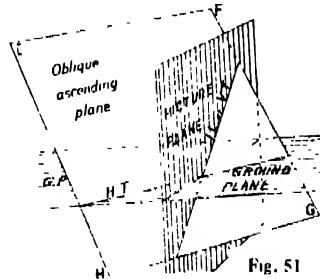


Fig. 51

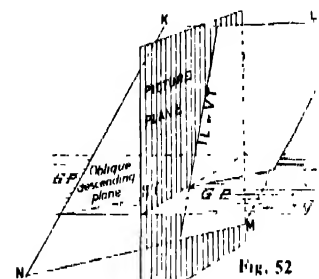


Fig. 52

Figs. 47-52. Representations of various planes used in perspective (see text).

NOTE. The V.L. and I.L. of any plane are always parallel to each other.

In this case they are vertical, because they belong to a vertical plane.

(iv) Find the C.V.L. (that is, centre of the vanishing line of the vertical plane). This is always done by drawing from the C.V. a line at right angles to the new V.L. In this case the C.V.L. happens to come just where V.P. 50' is. The C.V.L. is somewhat similar to C.V., which is merely the centre of the H.L., which is the V.L. of all horizontal planes.

The new representation is now required of the true or real position of the eye. To do this first find the distance from the eye to the C.V.L. This distance is the length of the V.Par. from E. to V.P. 50'. With C.V.L. as centre, revolve this distance on to a line always perpendicular to the V.L., just as in elementary work we take C.V. as centre, and the distance from it to the I.L. as radius, and revolve it downwards (or upwards) to find the first representation of the eye. In this problem in vertical planes the new representation of the eye comes on the H.L. at point E.I.

(v) Find the A.V.P. of the line AB—that is, 40' upwards. At E.I. measure an angle of 40' upwards from the H.L. (the V.L. of the G.P.), because AB makes 40' with the G.P. Continue this line (which is the V. Par. of AB) to meet the V.L. of the vertical plane at point A.V.P. 40'.

To obtain the A.M.P. take the A.V.P. as centre and the distance from it to E.I. as radius, and measure it off on the V.L. of the vertical plane at point A.M.P. 40'.

(vi) From point A (already found on the G.P.) draw a line to A.V.P. 40', and measure on it 9 ft. for the length of AB (using the same method as in elementary

work) that is, first draw a line from the line AB's own measuring point (i.e. A.M.P. 40') through A, and bring it forward to the I.L. of the vertical plane at point M. From M measure MN 9 ft. (full scale). From N draw a line back to A.M.P. 40', cutting the

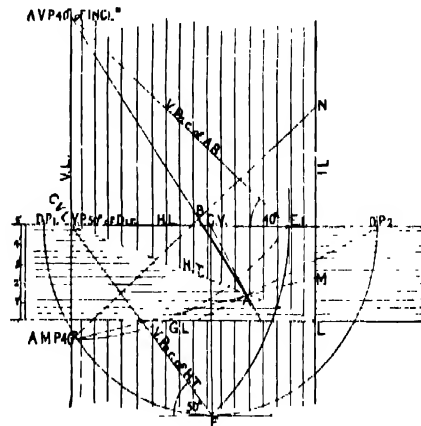


Fig. 53. Problem in vertical planes.

line from A to A.V.P. 40' at point B. Then AB is the perspective length required.

NOTE. In the drawing for this problem, the upright and horizontal shading lines are put in only to indicate the planes more clearly.

LESSON 10

The Perspective of Shadows

SHADOWS are projected from natural light, such as the sun or moon, or from some artificial source of light. The rays of light from the sun radiate in all directions in the sky, yet those which reach our earth are held to be parallel. The rays from an artificial source are said to radiate in all directions.

To determine the size and shape of any shadow, the position must be known of the light, also the position and kind of surface on which the shadow falls, and the position, shape and size of the object causing the shadow. To obtain the perspective representation of a shadow it is necessary (1) to imagine a vertical plane to pass through the source of light and the point whose shadow is required; (2) to determine the intersection of this vertical plane with the plane or surface of shadow; (3) to draw a line (to represent the ray of light) from the source of light through the point of the object, to meet the intersection on the plane or surface of shadow. This intersection is the shadow of the point.

Thus in Fig. 54 there are two vertical rods, *AB* and *CD*, standing on the G.P., with an artificial light (A.L.) at A.L., vertically over a point R.S.1 (on the G.P.). In order to find the shadows of these two rods, imagine one vertical plane to contain the A.L. and the rod *AB*, and another vertical plane to contain the A.L. and the rod *CD*. The intersection of the first vertical plane with the plane of shadow (the G.P. in this case) is the line from R.S.1 through *A* to *b*, and of the second vertical plane with the plane of shadow is the line from R.S.1 through *C* to *d*. The ray of light from A.L. through *B*

to *b* gives *b* as the shadow of *B*. Join *Ab*, which is the shadow of the rod *AB*. Similarly *Cd* is the shadow of *CD*.

Principles and Rules

The principles are the same whether the shadows are projected from artificial or natural light, as may be seen from the right-hand portion of Fig. 54, in which the sun (*S*) is substituted for the artificial light (A.L.).

The point R.S. is called the *point of radiation of shadow*. When such a point is found by drawing a line from the light perpendicular to the plane of shadow, the point is called the *seat of light*. The V.S. or V.P.S. is the *vanishing point of shadow*, and this name is generally used when finding shadows from natural light. It really answers the same purpose as the R.S. explained above.

Shadows cast by artificial light are explained in Fig. 55. It is seen that there are three lines: (1) a vertical line *AB* standing on the G.P.; (2) a horizontal line *CD* receding to R.S.2, and above the G.P. in a vertical plane whose H.T. also recedes to R.S.2; and (3) an oblique line *EF*, which is receding downwards in a vertical plane whose H.T. recedes to V.P.1. There is also an artificial light at A.L. vertically over the point R.S.1. Find their shadows.

The shadow of *AB* is found as explained in Fig. 54, but to get the shadow of *CD*, first find the plane of *C* and *D* (the ends of this line) on the G.P. (the plane of shadow) by drawing a perpendicular from *C* and *D* to meet the H.T. at *C'* and *D'* respectively; then proceed as in finding the shadow of *AB*, that is, find the shadows of the vertical construction lines (here, *CC'* and *DD'*), although all that is in fact required is the shadow of the top of each line. The shadow of *CC'* is *C'c*, and that of *DD'* is *D'd*. Join *cd*, which is the shadow of *CD*. Again, to find the shadow of the oblique line *EF*, find the plane of *F* on the G.P. by means of the perpendicular from *F* to meet the H.T. of the vertical plane (which contains *EF*) at *F'*; then find the shadow of the vertical line *FF'*. The latter's shadow is *F'f*. Join *Ef*, which is the shadow of *EF*.

Remember the following rules:

1. When a line (as *CD* in Fig. 55) is parallel to the plane of shadow, then both the line and its shadow have the same V.P.

2. To find R.S. from the A.L., draw a line to meet the plane of shadow parallel to the line whose shadow is required. The intersecting point is the R.S.

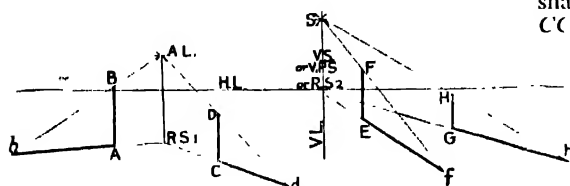


Fig. 54

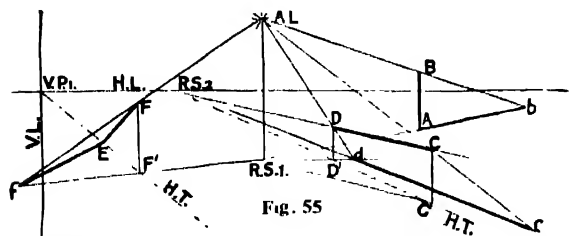
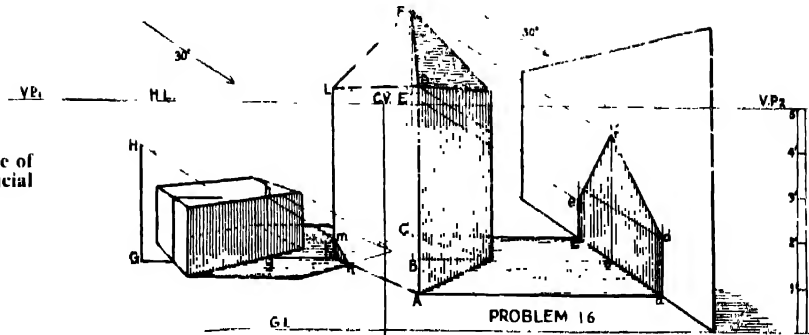


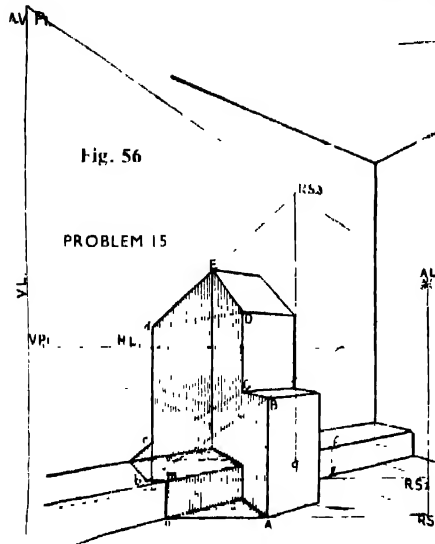
Fig. 55

Figs. 54 and 55. Showing the perspective of various shadows.

Fig. 57



Figs. 56 and 57. Nature of shadows cast by artificial light.



Problem 15. Given the perspective representation of a buttress standing on the G.P. against a vertical wall, at the foot of which is a rectangular step. A.I. an artificial light, and R.S.1 a point vertically beneath it on the G.P.; trace the shadow of the buttress on the ground, step, and wall.

Most of the processes used in solving this problem can easily be understood on reference to the drawing (Fig. 56). We shall here only call attention to one or two points in the procedure. R.S.2 must be the same height perspectively from R.S.1 as the height of the step. R.S.2 is used from which to draw the line through *m* to *b*. R.S.3 is obtained by drawing from A.I. parallel to *DE* to A.V.P.1 (which is the V.P. of *DF*), and from R.S.1 draw a line perpendicular to the left-hand wall, that is, draw it to V.P.1. This line cuts the dotted base of the wall at *g*, through which draw the vertical line cutting the one from A.I. to A.V.P.1 at R.S.3.

For shadows cast by natural light, the sun may be in three different positions with relation to the Picture Plane. (1) in the plane of the picture; (2) behind the P.P.—that is, in front of the spectator; (3) in front of the P.P.—that is, behind the spectator.

When the sun is in the first position, it is not possible to fix a point on the paper to indicate the sun, so usually arrows are drawn with their shafts slanting exactly in the same direction as the rays of light from the sun (as shown in Problem 16, Fig. 57). It should be

observed that when the sun is in the plane of the picture the rays of light, although inclined to the G.P., are parallel to the P.P. and therefore do not vanish, but remain parallel.

When the sun is in the second position, a point can be fixed to represent the sun. When it is in the third position, it is again impossible to represent the sun itself. Instead a point is fixed to represent the *vanishing point of the sun's rays*. This point is in reality a great distance under the G.P., exactly opposite the sun in the direction of its rays.

To find the shadows cast by natural light, the sun is imagined to be in a vertical plane, and its altitude is measured at F.2 (the representation of the eye for vertical planes), precisely as was used in the problems on lines in vertical planes. The following additional rule should now be learnt:

To find the V.S. or V.P.S. (vanishing point of shadow), draw a line through the sun (or the V.P.S.R.) and the V.P. of the line whose shadow is required. Where this line cuts the V.L. of the plane of shadow is the V.P.S.

Problem 16. The perspective representation is given of a vertical rod *GH*, a square slab, a rectangular hut with a pyramidal roof, and a vertical wall perpendicular to the P.P., all standing on the G.P. It is required to find their shadows when the sun is in the P.P. on the spectator's left at an altitude of 30°.

As the sun is in the P.P., all the intersections (H.T.s.) of the vertical planes through the various points whose shadows are required will be parallel to the P.P. whether they cut the G.P. or the plane of the wall. To find the shadow of the edge *AD*, draw the intersection line *Aa* on the G.P. and the intersection line *ad* on the wall, both parallel to the P.P., then through *D* draw a line *Dd* (to represent a ray of light from the sun) parallel to the direction of the sun's rays, that is parallel to the direction of the shaft of the arrow at 30° inclination to the G.P. Where the line *Dd* cuts the wall at *d* is the shadow of point *D*, and the lines *Aa* on the G.P. and *ad* on the wall are the shadow of *AD*. To find the shadow of point *F*, imagine a vertical plane to contain the axis *BF*, and from *B* draw the intersection lines *Bb* and *of*. Then through *F* draw a line (as a ray of light) *Ff* cutting *of* at *f*, which is the shadow of point *F*. Join *fd* to represent the shadow of *FD*. Find the shadows of the other edges of the hut, also those of the square slab and the rod, in a similar way.

It will be noticed in the drawing that a part of the shadow of the slab falls on the hut. The shape of this portion of the shadow is found by imagining a vertical plane to contain the upright edge *bl* of the hut, and to cut the G.P. along *lg* and the slab at *gh*. Then through *h* draw a ray of light *hm* as usual to cut *bl* at *m*. Join *mg*, which is a part of the shadow of the upper edge of the slab.

LESSON 11

Outdoor Sketching in Pencil and Water Colour

OUTDOOR sketching presents obvious difficulties. Gone are the comforts of working in the quiet room, everything at hand, with your subject set and static. The problems of light, colour, and composition are intricate enough, but out in the open the manifold changes of atmosphere and light bring additional problems, not to mention the distraction of breezes, showers, flies, and over-inquisitive children.

Desirable Equipment

Make yourself as physically comfortable as possible. Choose a comfortable sketching-stool, one that will bear your weight, and strap a cushion to it. A convenient substitute for an easel is a wooden box, about 15 ins. by 24 ins. and 6 ins. deep, with a hinged back and two supporting folding legs. The box has the advantage of being a universal receptacle, carrying paper, brushes, water bottle, colour box, even refreshments, and with your stool strapped on, it forms one compact load.

The paper should always be stretched or mounted on card, for paper that cockles can exasperate to madness. A good plan is to stretch paper on a small light, drawing-board—plywood is excellent—cut so as to fit into the back of your box.

A most useful little gadget, and the only one recommended, is a small opening cut in an ordinary postcard (Fig. 58). This, if held up in front of the subject you select, will help you

to find out how much of the scene you need to make a good pictorial arrangement. It corresponds to the viewfinder of a camera. Try it both ways up—upright compositions are rarely tried, and very often this method solves the difficulty.

What to Leave Out

Your main trouble in picture-making is not so much what to put in as what to leave out. Selection is the problem, and it is not to be solved by a slavish recording of everything in front of you when you start a drawing. Go for the masses first—the big things—and add detail only as you find it essential. Most beginners swamp their work with fiddling detail. It is better to decide how much you can dispense with and then ruthlessly dispense with more still. You will be surprised to discover how much is inessential to a satisfying picture or even to a reasonably faithful record.



Fig. 58

It will well profit a student to analyse some good reproductions of really fine drawings, say "Greta Bridge," by Cotman. (See Vol. 3, Colour Plate facing page 1409.) As an example of simplicity in treatment, nothing could be more admirable. Design, treatment, colour, are all very beautiful, and this beauty has been achieved by deliberately rigid selection. The artist has not attempted to depict every leaf of every tree, or anything like it.

For your earliest studies take quite simple subjects, such as a hay-stack, a bridge, or a shed; and make as accurate a study as you can, in pencil, pen, or chalk. (And do not neglect your proportions and the perspective!) Perhaps the suggestion of drawing with a pen so early in your studies may be surprising, but it is strongly recommended. As was stated in an earlier Lesson, pen-drawing makes for certainty of touch and does not permit of fumbling. Use a pencil for just a few lines to get proportion, then go for your subject with as direct and expressive a line as you can manage.

Bear in mind that even the merest sketch should show an appreciation of good spacing, which is really what composition means. Fig. 59 is a study of an old bridge that spans the



Fig. 59. PEN AND WASH. Light and shadow evenly distributed across bridge, river bank, and trees.

By W. P. Robins, R.E.



Fig. 60. CURVED AND SQUARE FORMS. Drawing of Amberley Church, Sussex, in pen and wash.
By W. P. Robins R.F.

small stream dividing the Isle of Thanet from Kent proper. It is suggested that the student should tackle some similar problem, where the brick and stone of the bridge is contrasted with the wood of the fence across the stream and the light and shadow playing across the banks and trees. The drawing was made with pen and ordinary blue-black ink, with a little brush work added for the shadows.

The drawing of Amberley Church and Castle (Fig. 60) is another example of the use of pen and wash. It is a much more complicated subject, and the drawing of the willow trees and the reeds was carefully studied. Note the contrast between their curved forms and the squareness of tower and castle wall.

It is quite natural that students should wish to splash about with colour, but restraint is urged, and it can be confidently predicted that more benefit will ultimately accrue from the making of honest monochrome studies.

Sketch-book Notes

The illustrations that follow were taken from sketch-books, and are examples of useful studies made of subjects that attracted one particular artist. The pencil drawing of the litter of pigs (Fig. 61) is typical of the method followed of jotting down notes of things seen and recorded during the day's sketching. Often a little drawing like this may be useful years after it is made.

The pen drawing of an old willow tree (Fig. 62) is another example of a straightforward study in the making of which much can be learnt. A much more difficult problem was tackled in the drawing in Fig. 63. It is a study of bare beech trees and their branches and roots. No one who desires to paint trees well should neglect to make drawings during the winter, for the construction and growth can be observed much more easily then than in summer.

Fig. 64 is a reproduction of a chalk drawing of a carhorse patiently standing while its next burden was being loaded into the cart. It was made with a black carbon pencil.

Always be ready to make quick notes in your sketch-book, even though you may be engaged on more important work. In no other way will you become a real landscape draughtsman, as distinguished from the easel-planter who stodgily pegs away regardless of the ever-changing scene around. Clouds coming and going, light playing on the fields and trees, men and cattle, all make a contribution to the interest. Your sketch-book should become loaded with notes. However flimsy and quickly-executed they may be, something is learnt from the effort to capture the elusive character of what you have seen.

If you are fortunate enough to be able to visit the Victoria and Albert Museum, at South Kensington, see the sketch-books and studies of one of the very greatest of all English painters of landscape, John Constable. There are thousands of his slight drawings preserved, each



Fig. 61. SKETCH BOOK NOTE. A chance note. A litter of pigs—caught asleep in a sty.

one a genuine study of nature in one of her swiftly transient and perpetually changing moods.

Contrasts

"Near Steyning" (reproduced in colour facing page 2612) is a water-colour sketch made on a windy day. An attempt was made to capture the suggestion of a strong breeze rustling through the trees and grassy foreground. Contrast between the running shadows and the warm light was obtained by the judicious use of darker washes. Note, too, how the cloud forms suggest the windy day. The colours used were aureolin yellow, yellow ochre, a little burnt sienna, a very little rose madder, and, for the sky, cobalt blue and blue-black - six colours in all. A little rose madder was added to the blue-black to get the greys of the sky. The darkest greens in the trees were got by mixing aureolin yellow and blue-black.

Note that the sky, ninety-nine times out of a hundred, is by a long way the lightest part of the scene before you. However intense its blue may seem to you, do not be tempted to give it so much colour as will in any way dim its wonderful



Fig. 62. TREE FORMS. Interest of natural shapes.

brightness. It is safer to keep the sky much lighter than was your original intention. Remember that it is beyond the power of pencil or water colour to depict that highest of all high lights, the midday sun shining from a clear sky; so do not attempt it.

Remember, too, that the sky is *not* a kind of stage backcloth. The same sky that disappears behind the hill or the horizon comes right up to where you are sitting, and envelops you.

In other words, it does not exist. Clouds do. They have their own shape and often a semi-solidity emphasised by their own light and shade. But be careful not to over-emphasise this. Their darkest parts are still usually far lighter in tone than anything below the sky, except the water that reflects the sky.

Cloud studies on their own are one thing; cloud and sky in relation to the landscape below are another matter. Many artists wash in the sky first of all to set the tone scale, and carry the wash well below the horizon if not over the whole paper, as a kind of reminder to themselves that the sky is everywhere in front of

them, and at the same time to ensure that it also appears, as it should, to be *behind* the most distant objects. There is much to be said for this method, especially as it also seems logical to begin at the top; but it also has its dangers, one being that of giving the sky undue importance from the start. Try all methods as it seems right to you, to discover which best suits you and the particular subject.

The drawing "Low Tide, Orford" (Fig. 65) was made with a fountain-pen and ordinary writing-ink, a slight wash of colour being added afterwards. This is an example of treatment of very flat country, where recession has to be suggested by a careful relation between the firmness of line used



Fig. 63. WINTER STUDY. Outlines of beech trees with branches and roots, in wash and colour tints.

B. W. P. Robins. R.F.

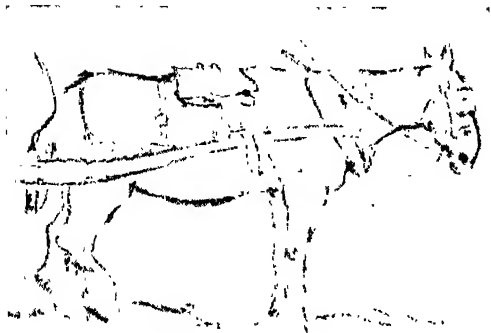


Fig. 64. Cart-horse sketched with black conte pencil.

for the pier in the foreground and the softer, slighter quality of the lines representing the distant castle and trees.

Note how the proportion of the river and its banks to the amount of sky shown is well below half of the paper. The sky is quiet, and in consequence the water is still. This is a point often missed and one frequently sees pictures where relation of sky to landscape is ill-considered. One of the first decisions to be made is as to what proportion of your picture will be sky. Use your view-finding gadget to help you here.

As in still-life painting (*see* Lesson 6), your actual treatment of water colour will cause you some heart-searching. If your brush is too heavily charged with pigment, the washes will get out of hand, the brush-work will run together and you will get a sploshy quality when the drawing is dry. On the other hand, work with a too thinly charged brush becomes niggly in character, which is a worse result.

The best course is probably to do a good deal of still-life painting before tackling landscape in water colour. Your *handling* of colour will then be almost unconscious, and that is when work comes easiest and results are best.

Many water-colour painters use a small sponge brush for taking out lighter tones and also use a knife, but the student would be well advised not to start exploiting these and other technical devices. Straightforward work pays best in the long run, and you will gather the technical equipment you need as you progress.

A clean rag is often helpful, especially when

you find your colour all out of tone because your tint went wrong in the mixing. Use a piece of blotting paper on your drawing, and clean up the palette with your rag. As a guiding rule, the tones should be considered on your palette, not messed about with on your paper. There is something highly pleasing about a well-laid, simple, direct wash upon paper. The white paper gleaming through clear washes of colour gives you that delicious transparency which is one of the finest qualities of a good water colour. Scrub and torture the surface of your paper, and this transparent quality is gone for ever.

Body colour, i.e. colour mixed with Chinese white (which is opaque), is best used sparingly, if at all. In unskilled hands it produces an unpleasant chalky effect. Reds, for example, tend to be pink. That limpid translucency of colour, so suggestive of the English climate, is sacrificed when body colour is used. Still, try it for yourself. You may find its use congenial.

Pencil plus Colour

A question sometimes asked is : Should the original pencil be visible when a drawing is completed in water colour? Logically, if the sketch is in full tone and the tones are all correct, they should not be visible ; but in practice they often are, and it matters little. On the other hand, there is much to be said for the water-colour drawing that is virtually no more than a tinted pencil drawing. The drawing is completed in pencil, even to the light and shade, and the various colours are then added in light washes. It is a method closely akin to that of the so-called "topographical artists" of the



Fig. 65. STRENGTH OF LINE. Recession is suggested by relation between river and sky.

Low Tide, Orford" by W. P. Robins, R.E.

late 18th century, the direct parents of modern English water-colour painting. The result of such a method is admittedly less "atmospheric," less suitable to any recording of the various moods of wind and weather; but the picture undoubtedly gains in definition, and the method is therefore particularly suitable when architecture or the structural formation of rocks is a prominent feature of your subject. It is a method, also, which favours those whose handling of a pencil is more proficient or more individual in style than their handling of colour.

Often, too, an artist can strengthen the objects in the foreground of a sketch, and give

them greater definition, by using his pencil *on top of* colour, leaving "atmosphere" to the middle distance and background. For this purpose a B or BB pencil, or black chalk, is best.

There are no rules and regulations. In making a picture, the end, if it is a good end, will always justify the means. So to the habit of practice add continual experiment.

A W. Rich's book, *The Art of Water Colour Painting*, is full of good practical advice on the subject, and is warmly recommended. But no amount of advice can ever be as valuable as the knowledge acquired directly from nature herself and from continual practice, practice, practice.

LESSON 12

Head and Figure Drawing

FIGURE drawing presents formidable problems to a beginner, and, as so often in the arts, a heavy jargon has evolved about its practice. Much of that encumbrance can be disregarded, and this short lesson will, as far as possible, dispense with anatomical and technical terms.

It is a great help to a student if he understands the construction of the skeleton in

its simplest divisions; the shape of a skull, the character of the elastic vertebral column or spine, the freely moving bones of the upper limb or arm, and its loose attachment to the shoulder girdle (consisting of the flat shoulder blade and the collar bone), the cage-like thorax or ribs, the solid pelvis or hip bone, the long bones of the leg, the nature of the knee-joint, and the construction of the foot with the arch of the instep and the bones of heel and toes.

The series of small diagrams show very simply the cardinal principles.

In every drawing the student must start with a perfectly understood vertical line, obtained either with a plumb-line, or by posing the model against a vertical projection such as a corner of a room.

Simple Poses

Fig. 66 is a suggestion of a pose as simple and symmetrical as could possibly be obtained. The feet are placed together flat upon the ground—in fact, the pose can best be described as "attention." Here the weight of the figure is carried equally on both feet. From the head downwards, all the limbs are disposed closely aligned one to the other. The position of the bony structure is shown in the accompanying diagram in as simple a manner as possible. The student should carefully compare the three small diagrams.

In Fig. 67 a simple movement has taken place, but the vertical line is just as essential. The weight of the body is now on one straight leg which supports the slightly sloping pelvis. The other leg drops a little, shortening the distance from the pelvis to the ground; hence the knee will bend, though, of course, the bones remain of the same length. As in the earlier pose, the centre of gravity must remain over the point of support, the feet. The trunk naturally curves, so giving the slope of the

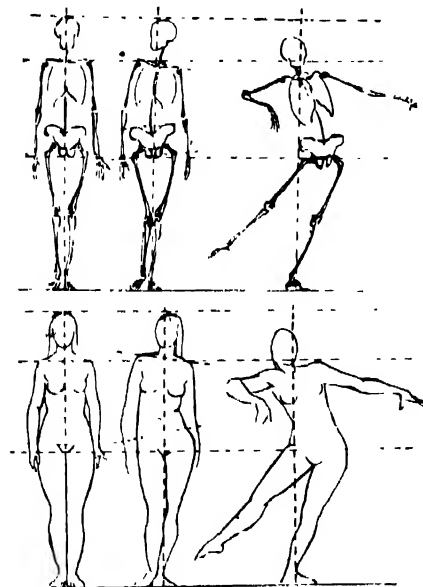


Fig. 66 Fig. 67 Fig. 68

FIRST PRINCIPLES OF FIGURE DRAWING. These diagrams and those in the opposite page show simple poses and movements, the human form having been reduced to its proportional divisions. The skeleton in Figs. 66-68 serves as a structural basis for the completed figure.

Sketches by J. A. Gran



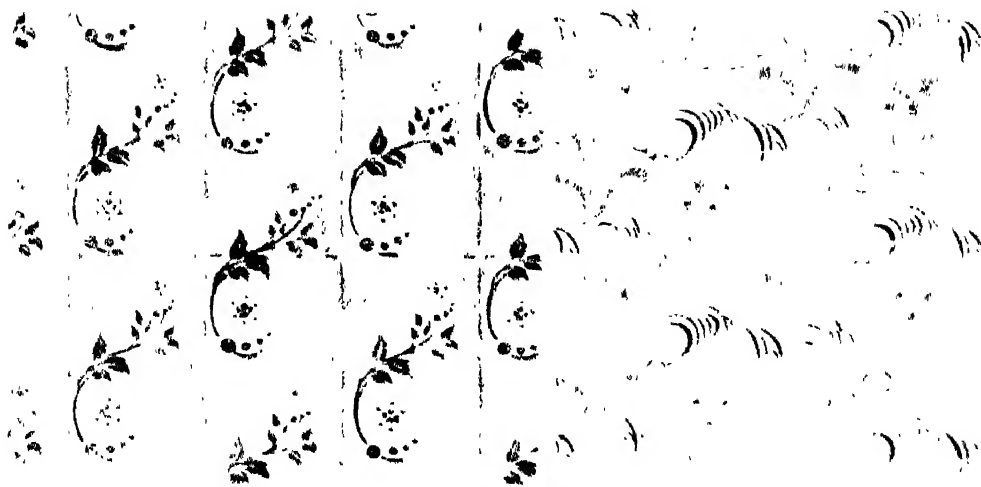
WATER-COLOUR SKETCHING

These two sketches were made in the open and were touched scarcely at all afterwards. In the drawing of the yachts there is more pencil work than in the landscape "Near Steyning" (see p 2610), which was a swift attempt to capture a sense of wind and rain.

W. P. Robins, R.E.

To face page 2612

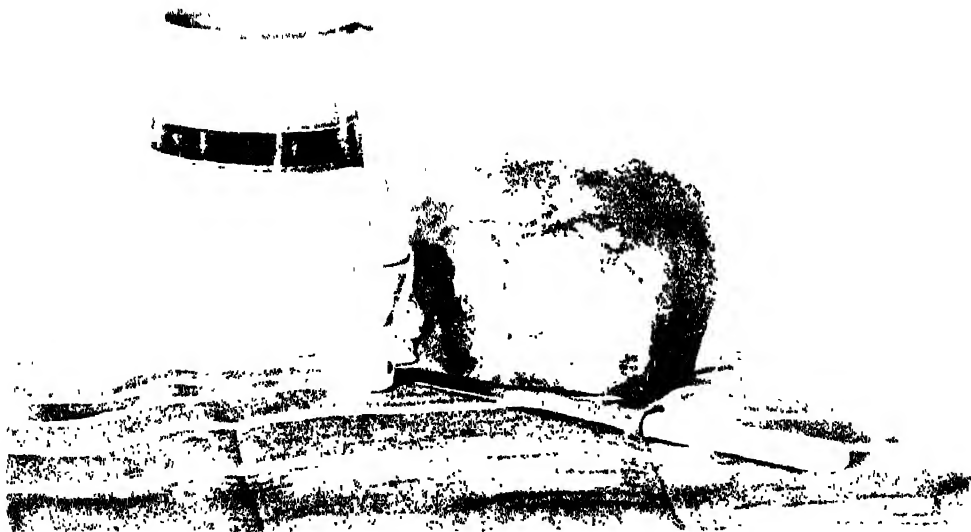
DRAWING AND DESIGN LESSON II



PATTERN DESIGNS

The frame-work governing the spacing of these repeating patterns for industrial designs is plainly shown. The second design is based on a "drop" (see p. 2636); the dotted lines show this. The units enclosed in each repeat can be easily recognized. The complete pattern is made by repetition of the units.

LESSON 22



STILL LIFE PAINTING

In the execution of this simple, direct still life in water colour, all scrubbing out was avoided. Careful choice of colour and tone was relied upon to produce a satisfactory result embodying clear pure colour and true values (see p. 2594). Great care was taken with the drawing before the colour was added, to ensure that no alterations were needed.

By H. P. Robins, R.I.

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DRAWING AND DESIGN LESSON 6

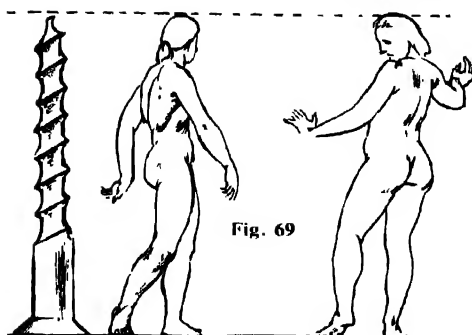


Fig. 69

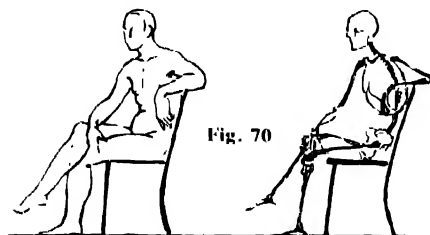


Fig. 70

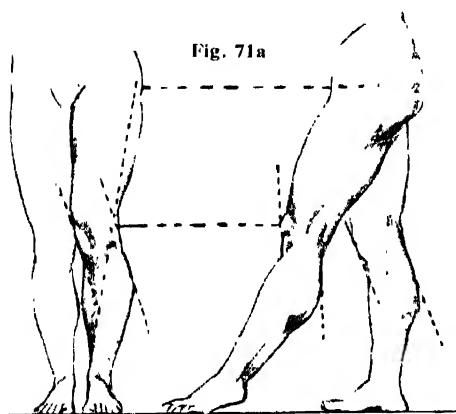


Fig. 71a

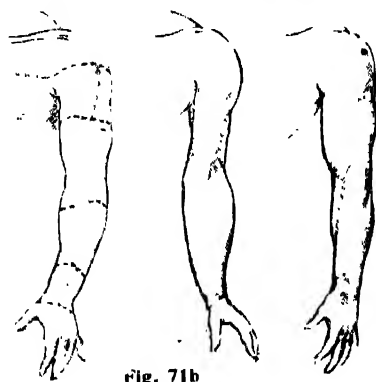


Fig. 71b

shoulders, which form a sloping line opposite to the line of the pelvis. This quiet simple movement produces a long stretched-out muscular line on the right side, as opposed to a concertinaed break in the left side, and also produces a long simple line from the pelvis to the ground. This, of course, is a classic pose used time and again.

Action Poses

Fig. 68 shows a pose of greater action. Here the weight of the body is entirely placed upon the foot on the ground, the hip is thrown sideways, and the angle of the spine is much more acute. Thus the head is nearer the ground than in the first two poses. The centre of gravity is always preserved. These are both simple illustrations of a principle that may be summed up as looking at the figure as a whole and realising its complete unity of structure and movement.

Never begin a drawing by a more or less complete drawing of the head alone. You might just as well start with a very careful drawing of a big toe.

The backbone or vertebral column is very elastic. Its forward movement is, of course, best shown in the well-known exercise of touching the toes. Its backward movement is much more restricted, as will be found if the head is tossed backward. The locking of the neck

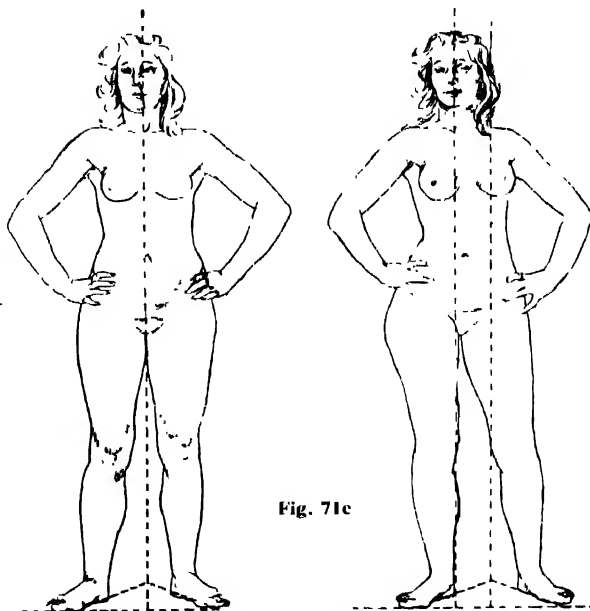


Fig. 71c

Figs. 69-71c. SIMPLE MOVEMENTS. Arm and leg movements should be carefully observed. In Fig. 71c the thrust of the weight of the body is carried and supported down the leg bones from the outside of the thigh to the inside of the ankle.

vertebrae of the spine stops the movement. But its elasticity is evident when the whole trunk is turned on the pelvis and the body is twisted to either side; in fact, the figure might be compared to a screw standing on its head. The drawings in Fig. 69 outline simply some characteristic poses showing the movements described, but the student will best understand these diagrams by testing the movements on that best of all models, himself. The two little diagrams (Fig. 70) of a sitting figure illustrate the importance of basic principles, too often totally disregarded. How often is a drawing started without any attention being given to the chair! As well build a house from the chimney downwards. Draw your chair first of all, and sit your figure down on it.

Arms and Legs

Diagrams 71a and 71b will afford sure assistance in constructive drawing of the arm and legs. They show the change of form as the arm is turned, and the change of direction of the leg from the thigh, through the knee to the calf. Fig. 71c is given to show the difference of the vertical line by a simple movement shifting the weight of the body. The axis is now straight down one leg instead of midway as in the first pose. The line of the hips is also altered.

These few precepts will be of help to the student, and they hold good in all drawing; sound construction is ever essential, whether your subject is an antique figure, an undraped

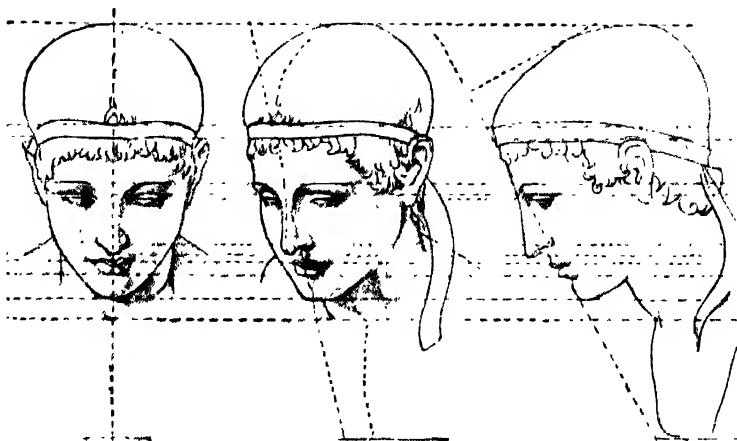


Fig. 72. **PORTRAIT DRAWING.** A strong sense of structure is revealed in these head drawings.

living model, or any ordinary clothed person. See that if your model is standing, your drawing is vertical, and that any other pose is understood and realised. In short, your drawing should have backbone.

Portraits

Portrait drawing demands much more than merely sitting down to make a copy of sweeping eyelashes, features, eyes, nose, mouth, etc. How often does the average student walk all round his subject as he should, studying the projection of the nose, prominence of forehead and jutting of chin, from the side and three-quarter views (Fig. 72)? More often the drawing is begun with no notice taken of these fundamental points, and the result is that the drawing has no structural sense and no evidence of the existence of hard and well-formed skull beneath the superficial features.

Fig. 73 shows a drawing from a head and an analysis of the structural forms. It is a three-quarter view. The dotted lines indicate a series of sections of the head showing the projections and recessions of the planes of the head. The diagram of the skull demonstrates the bony structures which are permanent. Such things as expression of emotion, grief, joy, etc., depend upon the contraction or expansion of the mobile muscles. But these things are only details. In every drawing of a head, whether it be that of a young woman or of an aged man, it is the bony structure that really determines the form.

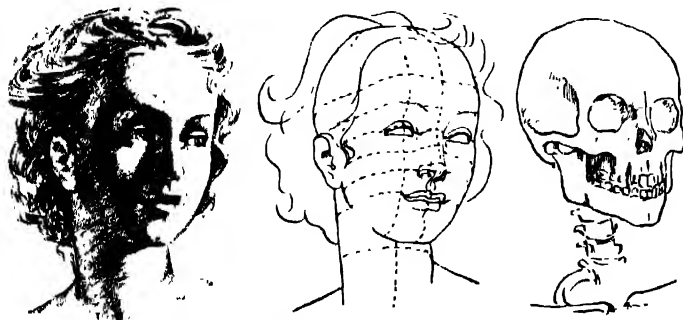


Fig. 73. The completed drawing of this head has been built up from the skull.

LESSON 13

The Terminology of Geometrical Drawing

THE term Geometry (Greek : *geo*, of the earth ; *metron*, a measure) originally signified land measuring ; but it now denotes the science of magnitudes in general, with their various properties and relations. We here follow the practical side of the subject, as the theoretical is dealt with in our Course on Mathematics (Vol. 3).

With geometrical work, strict accuracy is the essential quality. The tools required are those set out in Lesson 2.

Perhaps a word or two on papers might be useful. Detail paper is very suitable for ordinary geometrical work ; it can be obtained in a roll and is inexpensive. For important work, hot-pressed Whatman is often used, but that is more expensive.

DICTIONARY OF ELEMENTARY TERMS IN PLANE GEOMETRY

Acute Angle. An angle that is less than a right angle.
Adjacent Angles. Angles with a common vertex and one common arm.

Angle. The inclination of two straight lines which meet in a point, or *vertex*. The size of an angle does not depend upon the length of the lines forming it, but upon their inclination to each other. The sum of all the angles in any one triangle is equal to two right angles, or 180°.

Arc. Any part of the circumference of a circle between any two points on it.

Bisect. To cut into two equal parts.

Chord. A straight line joining any two points in the circumference of a circle.

Circle. A plane figure contained by one curved line, which is called the *circumference* or *periphery*, and is such that all straight lines drawn from a certain point within the figure to the circumference are equal to one another. This point is called the *centre* of the circle, and each of the straight lines is called a *radius* of the circle. The straight line drawn through the centre and terminated at both ends by the circumference is called the *diameter*, which divides the circle into two *semicircles* ; and if two diameters are drawn perpendicular to each other, each of the four parts of the circle is called a *quadrant*.

(N.B. — *Diameter* is also a straight line passing through the centre of any other figure, and terminated at both ends by the circumference of the figure.)

Complement of an Angle. The difference between it and a right angle.

Concentric Circles. Those which have the same centre but different radii.

Curved Line. One that is nowhere straight.

Diagonal. Line joining two opposite angles of a quadrilateral figure.

Figure. A space enclosed by one or more lines or boundaries. The sum of all the boundaries is called the *perimeter*, and the space within the perimeter is called the *area*.

Horizontal Line. One that is perfectly level.

Line. This has length without breadth.

Median. A line drawn from the vertex of a triangle to the middle point of the opposite side.

Multilateral Figures or Polygons. Figures contained by more than four straight lines. *Regular polygons*

have all their sides equal, and *irregular polygons* have their sides unequal. Polygons are divided into classes according to the number of their sides, thus : *pentagon*, having five sides ; *hexagon*, having six sides ; *heptagon*, having seven sides ; *octagon*, having eight sides ; *nonagon*, having nine sides ; *decagon*, having ten sides ; *undecagon*, having eleven sides ; *duodecagon*, having twelve sides.

Oblique Line. A line that slants.

Obtuse Angle. An angle larger than a right angle.

Orthocentre. The intersection of the perpendiculars from the corners of a triangle to the opposite sides.

Parallel Lines. Lines such as are in the same plane and never meet though produced indefinitely.

Plane. A level surface, such that, if any two points be taken in it, the straight line joining these two points lies wholly in that surface.

Point. This has position only, without magnitude, and in practice is usually represented by a dot.

Quadrilateral Figure, or Quadrangle. A figure contained by four straight lines, as the square, oblong, rhombus, and rhomboid. If the opposite sides are parallel it is called a *parallelogram*.

Rectangle, or Oblong. A four-sided figure with its opposite sides equal and all its angles right angles.

Rhomboid. Quadrilateral with its opposite sides equal, but its angles not right angles.

Rhombus. Quadrilateral with all its sides equal, but its angles not right angles.

Right Angle. When a straight line meets another, so as to make the adjacent angles equal, each of the angles is called a right angle, and the lines are said to be *perpendicular* to each other. It should be observed that *perpendicular* does not mean upright or vertical, but at right angles to another.

Right-angled Triangle. A triangle with one of its angles a right angle. The side opposite this right angle is the *hypotenuse*.

Sector. The space enclosed by two radii of a circle.

Segment of a circle. The space enclosed by an arc and its chord.

Square. Quadrilateral with all its sides equal and all its angles right angles.

Straight Line. The shortest distance between two points.

Superficies, or Surface. Extension in two directions, it has length and breadth, but no depth.

Supplement of an Angle. The difference between it and two right angles.

Tangent. A straight line which touches a circle or curve at one point, but does not cut the circle or curve when produced. A tangent to a circle is at right angles to the radius.

Trapezium. Quadrilateral with only two sides parallel, or, according to another definition, with no sides parallel.

Triangle. A figure contained by three straight lines. The side upon which it stands is termed its *base*, the point where the other two sides meet is its *vertex*, or *apex*, the angle at this vertex is the *vertical angle*, and the straight line which is drawn from the apex perpendicular to the base or the base produced is called the *altitude*. Triangles are named, with reference to their sides :

Equilateral, having three equal sides ;

Isosceles, having two equal sides ;

Scalene, having three unequal sides.

With reference to their angles :

Right-angled, having one angle a right angle ;

Obtuse-angled, having one angle obtuse ;

Acute angled, having all the angles acute.

LESSON 14

Preliminary Geometry and the Use of Scales

THE exercises in practical geometry given here are of a preliminary nature and such as must be thoroughly grasped by the student before proceeding to more advanced work. As will be seen, they are concerned with lines, angles, and proportionals, and they should be worked in reference to Fig. 74.

(i) To bisect a given line AB . Method i (a) and i (b): With centre A and any radius longer than half the line, describe an arc. With centre B and same radius, intersect it in C and D . Draw CD , which bisects the given line at right angles.

(ii) To draw a perpendicular to a given line AC , from a given point A within or B without the line. The most practical, most accurate, and quickest way is by placing a ruler level with the line AC , and a set square with one of the edges exactly touching the ruler, and the other passing through the given point.

(iii) To bisect a given angle ABC . With centre B and any radius, describe an arc to cut the lines in A and C . With centres A and C and any radius, describe arcs to intersect in D . Draw BD , which bisects the angle. By this means an angle may be divided into 4, 8, 16, etc., equal parts.

(iv) To draw a line parallel to another AB , at a given distance C from it, or through a given point D . At any point in AB , draw a perpendicular GF equal to the distance C . Place one edge of a set square level with

AB , then a ruler against another edge of the set square. Hold the ruler firmly fixed, but slide the set square along it until the edge (which was level with AB) passes through F , and draw FE the required line. When the point D is given, the method is the same, except that no perpendicular is required, and the line through D is shown as KH .

(v) To make an angle equal to a given angle ABC . Draw any line EF . With centre B and any radius, describe the arc AC . With centre E and same radius, describe the arc DI . With distance AC as radius and F as centre, cut the arc in D . Draw ED through E and D .

(vi) Through a given point C to draw a line meeting a given line AB at an angle equal to a given angle H . Through C draw CF parallel to AB . At C make the angle FCG equal to H , and the angle ACG will also be equal to it.

(vii) To bisect the angle made by two converging lines BA , DC , without using the apex. Draw a line at any convenient distance parallel to AB , and another at same distance parallel to CD to intersect in E . Bisect angle obtained.

(viii) Throughout a given point E to draw a line converging to the same point at which two other converging lines would meet if produced. Draw any two convenient lines FG , HK , parallel to each other and cutting both AB and CD . Join E and F , E and G . Through H draw HL parallel to FE , and through K , KL parallel to GE , intersecting at L . Draw EL through E and L .

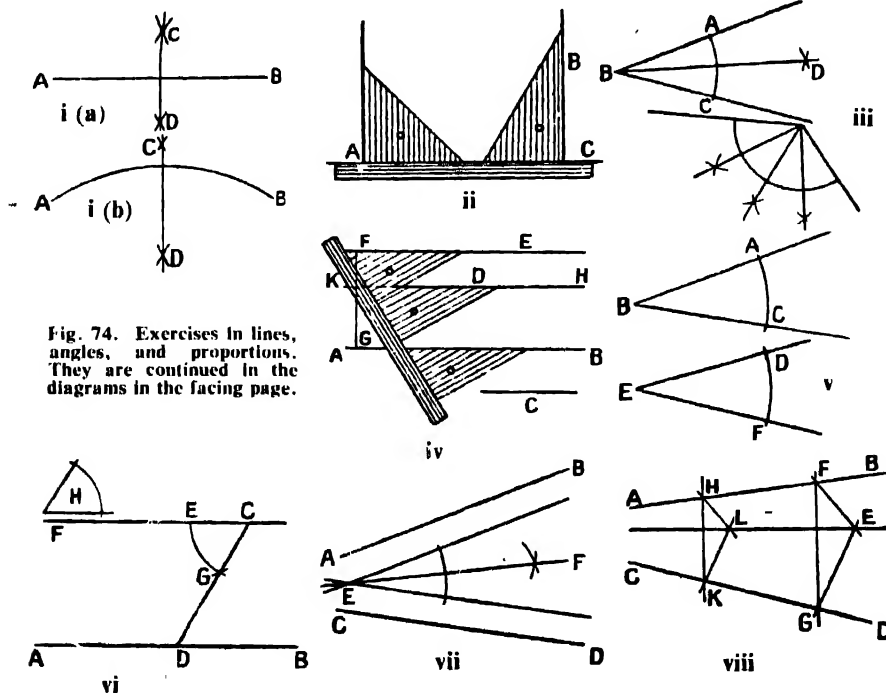


Fig. 74. Exercises in lines, angles, and proportions. They are continued in the diagrams in the facing page.

(ix) In a given line AB to find a point equidistant from two given points C and D without it. Join C and D , and bisect the line CD by a perpendicular meeting AB in E , which is the required point.

(x) To draw two straight lines to meet a given line CD from two given points A and B without it, and to make equal angles with it. Draw AE perpendicular to CD , so that FE equals FA . Draw BE cutting CD in G . Draw AG . Then AG and BG are the required lines.

Proportionals. If a straight line be drawn parallel to one side of a triangle, it cuts the other two sides, or those produced, proportionally.

(xi) To divide a line AB into any number of equal parts (say, seven). Draw AC at any angle with AB , and set off on it any convenient distance seven times. Join $7B$ and from the points 6, 5, 4, 3, 2, 1, draw parallels to $7B$ to cut AB .

(xii) To divide a line AB proportionally to a given line CD . Draw AE at any angle with AB . Make $A1, 12, 23, 3E$ equal to $C1, 12, 23, 3D$ respectively. Join E and B . Draw parallels to EB through 3, 2, and 1 to meet AB .

(xiii) To divide a given line AB in the same proportion as the Nos. 3, 5, and 2. Draw AC at any angle with AB , and set off on it $3 + 5 + 2$ equal parts. Join 10 and B , and through 3 and 8 draw parallels to $10B$ to meet AB . Then $AD : DE : EB$ are as 3 : 5 : 2.

(xiv) To find a fourth proportional (greater or less) to three given lines A, B , and C . Draw DG and, at any angle with it, DH . Set off DF equal to A , and DE equal to B . Join E and F . Set off EG equal to C . Through G draw GH parallel to EF cutting DH in H , then EH is the fourth proportional *greater*—i.e. $DE : DF :: EG : EH$. When the fourth proportional *less* is required, use the same method, but begin with the *longest* line.

(xv) To find a third proportional (greater or less) to two given lines A and B . This is the same thing as finding the fourth proportional to three given lines,

the last two of which are equal (e.g. $A : B :: B : B$; required line). Proceed as in (xiv) but remember B is used twice (in xv, CF and CD each equal B). CE is the required third proportional *greater*. For the third proportional *less*, begin with B and use A twice.

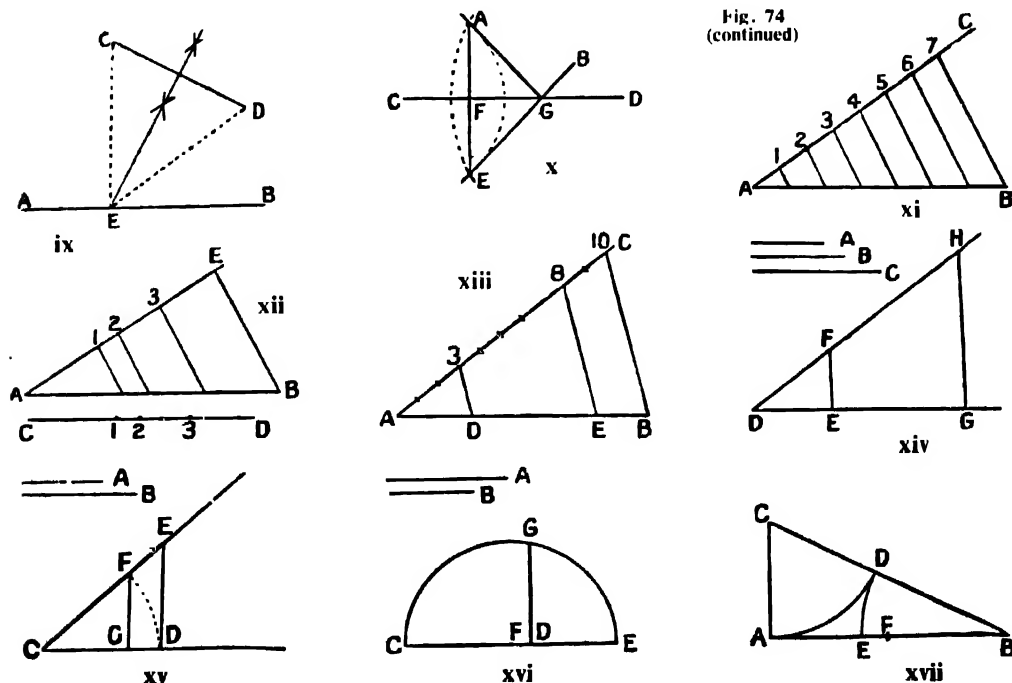
(xvi) To find a mean proportional to two given lines A and B . On a straight line make CD equal to A , and DE equal to B . Bisect the whole line CE in F and describe a semicircle with F as centre and FC or FE as radius. At D draw DG perpendicular to CE to meet the arc in G . Then DG is the mean proportional—i.e. $CD : DG :: DG : DE$, or $A : DG :: DG : B$.

(xvii) To divide a line AB into an extreme and mean ratio—i.e. so that one part shall be a mean proportional between the whole line and the other part. Draw AC perpendicular to AB and equal to half of it (AF or FB). Join B and C . Make CD equal to CA . With centre B and radius BD cut off BE . Then AB is divided at E , so that $AE : EB :: EB : AB$, or so that the rectangle AE, AB , equals the square on EB .

How to Draw a Scale

We are here concerned with the varieties and construction of scales so far as these relate to practical geometry. It should be emphasised at the outset that all scales must be constructed with great care, and drawn with a sharp, hard pencil or fine pen to ensure accuracy.

To draw a scale of $\frac{3}{4}$ in. to 1 ft. to measure 6 ft. and show feet and inches, draw two parallel lines about $\frac{1}{16}$ in. apart. Set off $\frac{3}{4}$ in. six times, then each of these parts represents 1 ft. Divide the first part into 12 equal divisions, each of which will represent 1 in. When figuring and naming the parts, the zero should be placed as shown in Fig. 75, i, so that



dimensions can be taken off readily with the dividers. Thus, to take off 3 ft. 8 in., place one leg of the dividers on point 3 ft. and the other on 8 in. The representative fraction is obtained thus :

$$\frac{\frac{3}{4} \text{ in.}}{1 \text{ ft.}} = \frac{\frac{3}{12} \text{ in.}}{12 \text{ in.}} = \frac{3}{48} = \frac{1}{16}$$

To construct a scale of $1\frac{1}{2}$ in. to 1 yd. to measure 3 yds. and show yards and feet. Draw two parallel lines as before. Set off $1\frac{1}{2}$ ins. three times, and divide the first part into three equal divisions, which represent feet.

Representative fraction :

$$\frac{1\frac{1}{2} \text{ in.}}{1 \text{ yd.}} = \frac{1\frac{1}{2} \text{ in.}}{36 \text{ in.}} = \frac{3}{72} = \frac{1}{24}$$

To draw a scale of $2\frac{1}{2}$ in. to 1 mile to show miles and furlongs, and to measure 2 miles. Draw two lines as before. Set off $2\frac{1}{2}$ in. twice to represent miles, and divide the first part into eight equal divisions, which represent furlongs.

Construction of Diagonal Scales

Diagonal scales are used when the divisions become very minute. The construction is based upon the principle of similar triangles. Let the rectangle $ABCD$ (Fig. 75, ii) be divided into four equal parts by parallels to AB , and the diagonal BD be drawn, then a number of similar triangles will be formed. Thus the triangles $C'BD$ and $JB'F$ are similar ; therefore if B is half of BC then JB' is half of $C'D$. In the

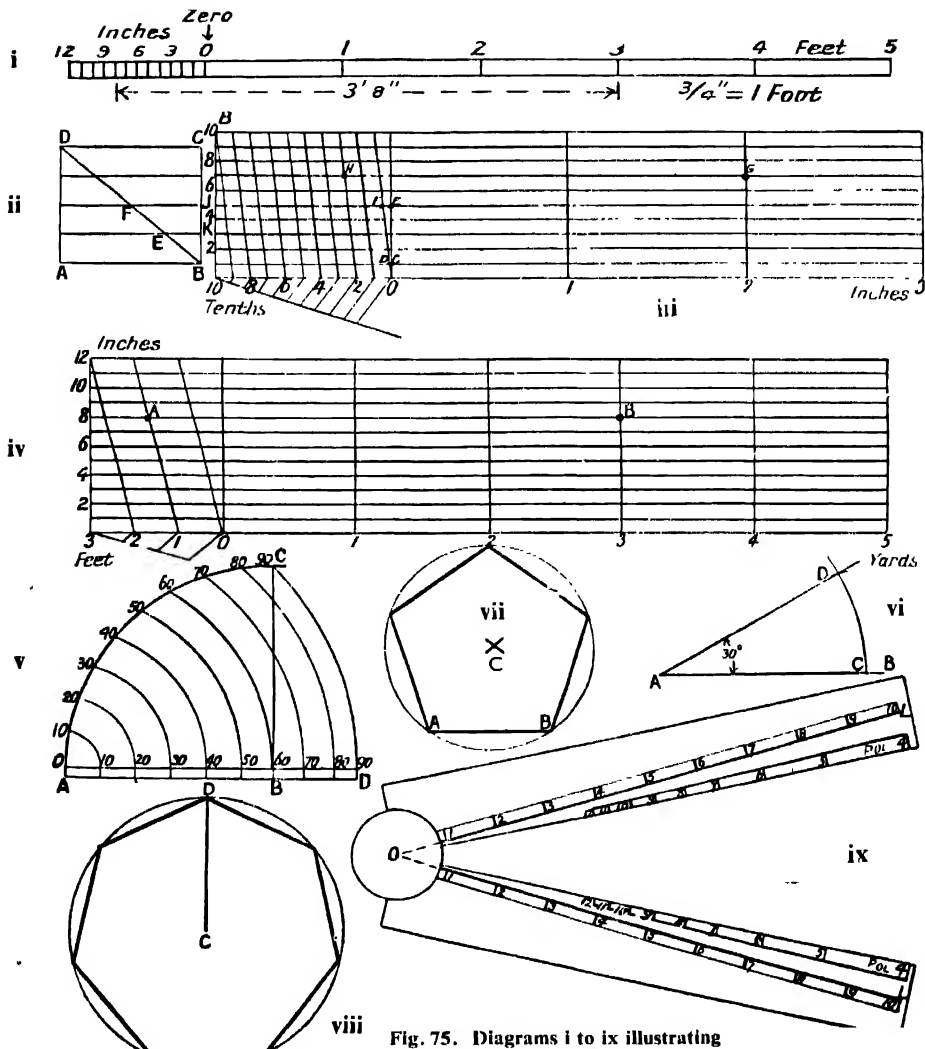


Fig. 75. Diagrams i to ix illustrating the use of scales.

same way, KE is one-quarter of CD . As CD may be as small as you like, it can be easily realized how valuable this principle is. From a plain scale are obtained two degrees of measurement, i.e. miles and furlongs, or yards and feet; but from a diagonal scale, as you will see, you can obtain three such degrees, e.g. yards, feet and inches.

To draw a diagonal scale showing inches, tenths, and hundredths of an inch, and to measure 4 in. Draw a line (Fig. 75, iii) and mark off on it four separate inches. Divide the first inch into 10 equal parts for tenths of an inch, then on a perpendicular erected at 10 set off 10 equal parts to any convenient unit, and through each draw parallels to the first line. Erect perpendiculars at 0, 1, 2, and 3 inches; join 9 and B ; and through each division for tenths of an inch, draw the other diagonal lines parallel to $9B$ as shown. The distance CD is $\frac{1}{10}$ in., EF is $\frac{1}{100}$ of an inch, and GH is $2\frac{1}{100}$ in. or $2\cdot27$ in.

Draw a scale of $\frac{1}{48}$ to show yards, feet, and inches, and to measure 6 yds.

This $\frac{1}{48}$ means $\frac{1}{48}$ in. to a yard, or $\frac{1}{48}$ of 1 yd.

$$\frac{1}{48} \times \frac{36}{1} \text{ in.} = \frac{36}{48} \text{ in.} = \frac{3}{4} \text{ in.}$$

Draw a line (Fig. 75, iv) and mark on it $\frac{3}{4}$ in. six times, to represent yards. Divide the first division into three equal parts for feet. On a perpendicular erected at 3 feet, set off 12 equal parts of any convenient unit, and through each part draw parallels as before. Erect perpendiculars at 0, 1, 2, 3, 4, and 5 yards. Join 2 ft. and 12 in., and draw other diagonals parallel to it. Figure and name divisions on scale as shown. AB represents 3 yd. 1 ft. 8 in.

For Measuring Angles

A "scale of chords" is used for measuring angles, and is marked on a ruler or protractor by the letters CH or CHO . The best way to know how to use this scale is to learn its construction.

Make a quadrant ABC (Fig. 75, v). Divide the arc AC into nine equal parts of 10° each.

The divisions 10, 20, 30, etc., on AD are found by taking A as centre with radius $A10$, $A20$, $A30$, etc., on arc AC , and marking them from A along AD as shown by concentric arcs. The distance from A to each division on AD is the chord of the angle containing that number of degrees. The divisions become smaller as they approach 90° . The distance 0 to 60 is *always* the radius of the arc to be used in making any angle. Thus, to make an angle of 30° , draw any straight line AB as in Fig. 75, vi. With either end, as A , as centre, and radius $A60$ in Fig. 75, vi, describe an arc CD . With C as centre and $A30$ as radius cut CD in D . Join AD , then DAC is an angle of 30° .

Uses of the Sector

The sector is an instrument (Fig. 75, ix) formed of two flat legs hinged at O . Lines OL are drawn radiating from O , one on each leg, and are called *the line of lines*, by the use of which problems in proportion can be readily solved. There is also *the line of polygons*, marked POL . Care must be taken to measure always from points on the lines (thick in illustration) drawn from the centre O .

The following five problems show some of the uses of the sector:

1. To bisect a line. Open the sector until the transverse distance from, say, 8 to 8 on OL equals the given line. Then the distance from 4 to 4 is half the line.
2. To divide a straight line into five equal parts. Open the sector until the transverse distance from 5 to 5 on OL equals the straight line, then the distance from 1 to 1 will be $\frac{1}{5}$ of the given line.
3. To find x in the proportion $2 : x :: 5 : 2\frac{1}{2}$. With the dividers measure $2\frac{1}{2}$ in. Open the legs of the sector until the distance between 5 on OL of one leg and 5 on OL of the other is $2\frac{1}{2}$ in. Then the transverse distance between 2 and 2 on OL is the required distance x .
4. To inscribe a regular heptagon in a circle. Open the sector until the distance from 6 to 6 on POL equals the radius CD of the circle (Fig. 75, vii). Then the transverse distance from 7 to 7 on POL is the side of the heptagon.
5. To construct a regular pentagon on a given line AB . Open the sector until the transverse distance from 5 to 5 on POL equals AB (Fig. 75, vii). With A and B as centres, and the transverse distance from 6 to 6 as radius, make arcs intersecting at C . With centre C and same radius describe a circle. Set off AB round it.

LESSON 15

Quadrilaterals and Regular Polygons

THE student can now proceed to the construction of four-sided figures or quadrilaterals, and of regular polygons.

The following should be studied with reference to Fig. 76:

- (i) To construct a square, the side AB being given. At A and B erect the perpendiculars AD and BC respectively, each equal to AB . Join CD .
- (ii) To construct a square, the diagonal AB being given. Bisect AB by the horizontal CD . With centre

E and radius EA , describe a circle cutting CD in C and D . Draw AD , DB , BC , and CA .

(iii) To construct an oblong or rectangle, the two sides AB and CD being given. At A and B erect the perpendiculars AF and BE respectively, each equal to CD . Join EF .

(iv) To construct an oblong, the diagonal AB and one side CD being given. Bisect AB in E . With centre E and radius EA describe a circle. With centres A and B and radius CD , cut the circle in G and H on opposite sides of AB . Join AG , GB , BH , and HA .

(v) To construct a rhombus, the side AB and one of

the angles C being given. At A make an angle equal to C, and make AE equal to AB. With centres B and E and radius AB, describe arcs intersecting at D. Join BD and FD.

(vi) To construct a rhombus, the diagonal AB and one side CD being given. With centres A and B and radius CD, describe arcs intersecting at E and F. Join AE, EB, BF, and FA.

(vii) To construct a rhomboid, the two sides AB, CD, and an angle E being given. Draw FG equal to CD. At F make an angle equal to E. Make FJ equal to AB. Through J draw JH parallel to FG, and through G draw GH parallel to FJ, cutting JH in H.

(viii) To construct a rhomboid, the diagonal EF and the two sides AB and CD being given. With centres E and F and radius AB describe arcs on opposite sides of EF. With the same centres and radius CD, describe arcs on opposite sides of EF intersecting the first arcs in G and H respectively. Join EG, GF, FH, and HE.

(ix) To construct a trapezium, the diagonal AB and two pairs of equal sides CF and EF being given. With centre A and radius CD describe an arc. With centre B and radius FF describe another arc intersecting the first in G and H. Join AG, GB, BH, and HA.

Regular Polygons

The general and special methods of constructing regular polygons are illustrated in Fig. 77.

The general methods (i, ii, vii) apply equally to all polygons, but in particular polygons the special method is sometimes shorter and more accurate (iii, iv, v). The following are important facts concerning regular polygons; they should always be carefully observed to avoid errors in construction.

Lines which bisect the angles of regular polygons meet in one point, which is the centre of the figure, and they divide the polygon into a number of equal triangles. In the hexagon

these are equilateral (iii,) but in all other regular polygons they are isosceles (v, vi).

The centre of the polygon is the same as that of the circle to which the sides of the polygon are tangent (the *inscribed circle*) and also of the *circumscribed circle* which passes through the angular points (i-vii).

The sum of all the interior angles of a regular polygon plus four right angles is equal to twice

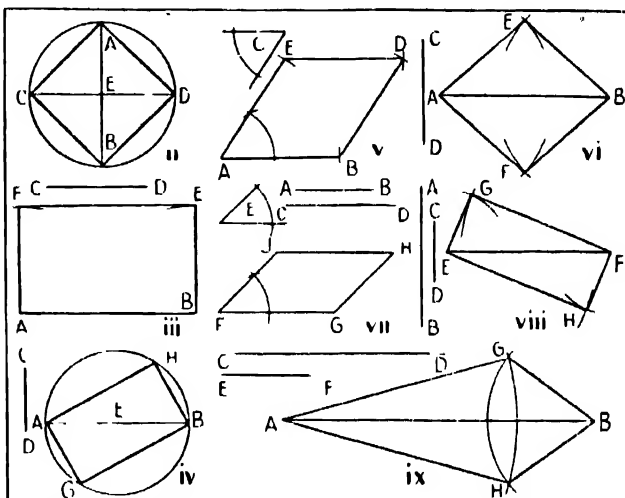
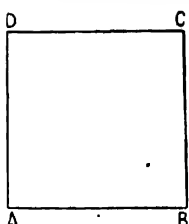


Fig. 76. Diagrams (i) to (ix) showing the construction in geometry of quadrilaterals.

as many right angles as the figure has sides. This affords a ready method of constructing any regular polygon by means of the protractor when the side is given—a fact made use of in surveying.

Fig. 77 should be studied in connection with the following problems.

(i) In a given circle, to inscribe any regular polygon (Approximate method). Draw the diameter AB and divide it into the same number of equal parts as the figure has sides (say, five). With A and B as centres, and AB as radius, make arcs intersecting at C. From C draw CD, always through the second division on AB, cutting the circle in D. Join AD, which is one side of the pentagon required. Set off AD round circle and join points as shown.

(ii) Another method. Draw any radius AB. At the centre A make an angle with AB equal to 360° divided by the number of sides of the regular polygon required; say, a pentagon.

Thus, $360^\circ \div 5 = 72^\circ$. Therefore, make the angle $BAC = 72^\circ$. Join BC, which is one side of the pentagon. Set off BC round the circle, and join the points as shown.

(iii) To inscribe a regular hexagon in a given circle (Special method). Draw any diameter AB. With

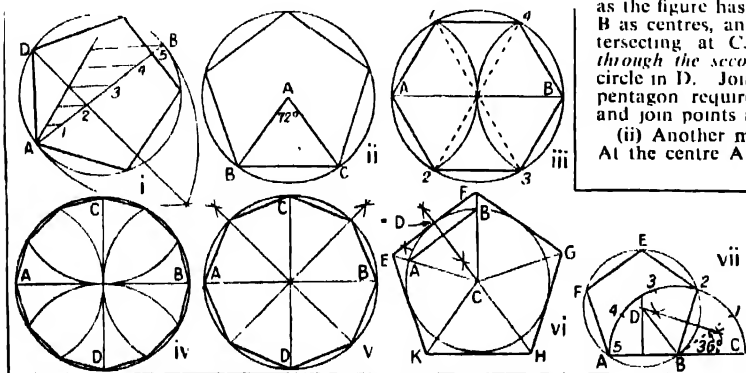


Fig. 77. Diagrams (i) to (vii) showing the construction of regular polygons.

centres A and B, and radius equal to that of the circle, cut the circle in 1, 2, 3, and 4. Join the points as shown.

(iv) To inscribe a regular duodecagon in a given circle (Special method). Draw two diameters AB and CD perpendicular to each other. With centres A, B, C, and D, and radius equal to that of the circle, describe arcs cutting the circumference of the circle. Join the twelve points as shown.

(v) To inscribe a regular octagon in a given circle (Special method). Draw two diameters AB and CD as in (iv). Bisect each quadrant thus formed. Join the eight points thus obtained.

(vi) To describe any regular polygon about a given circle (General method). Divide the circumference into as many equal parts as the figure is to have sides (say, five for a pentagon). From the centre C draw lines through each point. Draw AB, one of the sides

of the inscribed pentagon. Bisect AB by the perpendicular CD, cutting the circumference in D. Through D draw the tangent EF parallel to AB, cutting CF in F, and CF in F. Make CG, CH, and CK each equal to CF or CF. Join F, G, H, K, and E as shown.

(vii) On a given line AB to construct any regular polygon (General method). Produce AB, and with centre B and radius BA describe a semicircle, and divide it into the same number of equal parts as the figure has sides (say, five). Join B with 2. Bisect AB and B2 by lines intersecting at D, with D as centre and radius DA or DB or D2 describe a circle. Set off AF and FE each equal to AB. Join the points thus obtained.

In this construction divide the semicircle with the protractor. As there are 180° in a semicircle, divide 180° by the number of sides the polygon will have; thus, $180^\circ \div 5 = 36^\circ$. Then make the angle CBI equal to 36° , and mark off C1 round the semicircle.

LESSON 16

Proportional Scales and Construction of Triangles

THIS Lesson teaches first how to enlarge or reduce the scale of a drawing, and secondly how to construct triangles of various kinds.

The following problems should be worked in reference to Fig. 78.

1. To construct an irregular polygon from a rough diagram, the dimensions on a diagonal AE, and the ordinates bB, cC, dD, etc., being given. AE = 9 ch., Ah = 1 ch. 30 l., Ab = 2 ch., Ag = 4 ch. 40 l., Ac = 6 ch. 30 l., Af = 6 ch. 80 l., Ad = 7 ch. 15 l. The ordinates hH = 2 ch. 60 l., gG = 1 ch. 25 l., fF = 2 ch. 20 l., dD = 1 ch. 60 l., cC = 1 ch. 10 l., and bB = 2 ch. 80 l. Scale, $\frac{1}{2}$ in. to 1 ch.

First construct the scale as shown in Fig. 78, i. The diagonal scale is for obtaining measurements of 5, 10, or 15 l. Draw AE 9 ch. long according to scale, then set off Ah, Ab, Ag, etc., on it. At the points h, b, g, c, etc. erect the ordinates according to scale. Join A, B, C, D, E, F, G, and H.

2. To enlarge or reduce a drawing by a proportional scale. Say, to enlarge the given drawing of a gate (Fig. 78, ii) so that AB shall be $2\frac{1}{2}$ in. First construct the proportional scale by drawing the two lines AB and Ab at any angle with each other, making AB = AB and Ab = $2\frac{1}{2}$ in. Mark the several distances on small drawing on AB. Join B and b, and through H, D, E, F, C, and G draw parallels to Bb as shown. Then the respective measurements along Ab are the required ones for the larger drawing.

3. To enlarge a map. Make a proportional scale as before, and as shown in Fig. 78, iii (see page 2622). Set out the squares for the larger map according to enlarged scale, and then draw the map so that all parts come in corresponding positions.

The next problems should be worked in reference to Fig. 79.

(i) To construct an equilateral triangle on a given straight line AB. With centres A and B and AB as radius (Fig. 79, i) describe arcs intersecting at C. Join AC and BC. Then ABC is the triangle required.

(ii) To construct a triangle with sides 2.5 in., 1.8 in.,

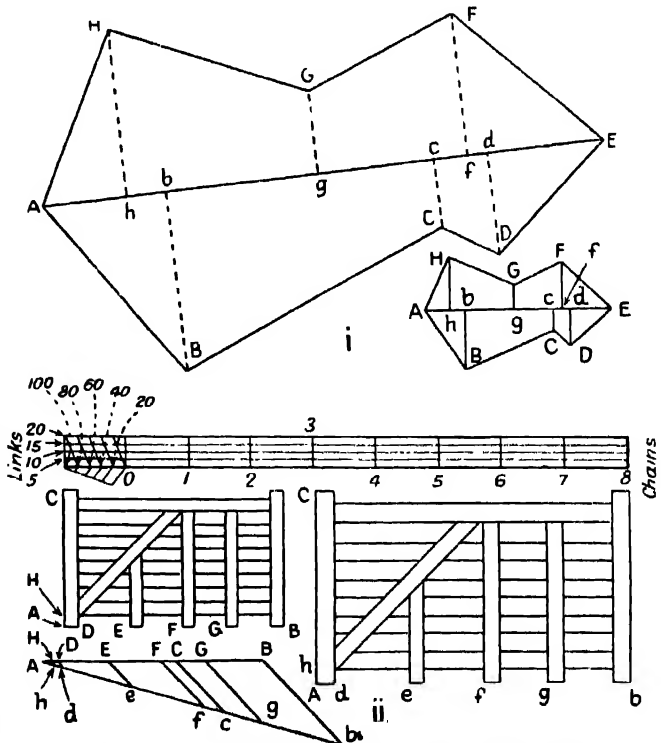


Fig. 78. How to enlarge or reduce the scale of a drawing.

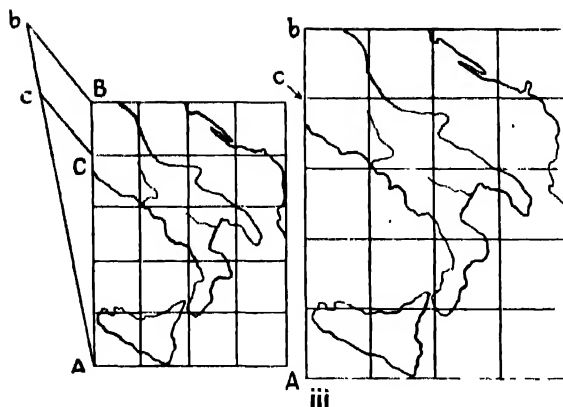


Fig. 78, continued from page 2621. How to enlarge or reduce the scale of a drawing.

and 3 in. First (Fig. 79, ii) draw one side, say, $AB = 3$ in. as base; with A as centre and a radius of 2.5 in. describe an arc, and with B as centre and 1.8 in. as radius, describe another arc cutting the other in C . Join AC and BC , which complete the triangle required.

(iii) To construct an isosceles triangle, the base AB and the altitude CD being given. Bisect AB in D (Fig. 79, iii) and at E erect a perpendicular EF , equal to CD . Join FA and FB . Then AFB is the triangle required.

(iv) To construct an isosceles triangle having given the vertical angle, CDI and the base AB . With D as centre and any convenient radius (Fig. 79, iv) cut off DC equal to DI . Join CE . At A and B make angles each equal to ICD or ICD . Then AFB is the triangle required.

(v) To construct an isosceles triangle, the vertical angle C and the altitude AB being given. Draw DE perpendicular to AB (Fig. 79, v). Bisect the angle C . At B construct an angle on each side of AB , each equal to half the angle C . DEB is the required triangle.

(vi) To construct a triangle, the base AB and the ratio $2:4:3$ of the angles being given. Produce AB any length (Fig. 79, vi). With A or B as centre, describe a semicircle and divide it into nine equal parts ($2:4:3$). Draw AC through 2. Join $A4$. Through B draw BC parallel to $A4$, meeting AC in C . ABC is the triangle required.

(vii) To construct a right-angled triangle, the base GH and hypotenuse CD being given. Take a line AF (Fig. 79, vii) equal to CD as diameter, and bisect it in E . With E as centre describe a semicircle FBA . With A as centre and GH as radius, cut the semicircle in B . Join BF and AB . Then ABF is the triangle required, and it has the right angle at B .

(viii) To construct a right-angled triangle, the hypotenuse AB and an acute angle C being given. Bisect AB in D (Fig. 79, viii). With D as centre

describe a semicircle on AB . At A construct an angle BAE equal to C . Join BE . ABE is the triangle required.

(ix) On a given base AB , to construct a triangle similar to a given triangle CDE . Make the angles at A and B respectively equal to those at C and D (Fig. 79, ix). Then ABF is the triangle required.

(x) To construct a triangle, the altitude CD and the base angles A and B being given. Through C and D (Fig. 79, x) draw lines EF and GH perpendicular to CD . At C make the angle ECG equal to A and FCH equal to B . CGH is the triangle required.

(xi) To construct a triangle, the base AB 1.75 in. long, the vertical angle C 30° , and the altitude 1.5 in. being given. Bisect AB in D (Fig. 79, xi) and erect a perpendicular at D . At either end of AB make an angle of 60° ($90^\circ - \text{angle } C$), intersecting the perpendicular at I . With centre I and radius IA draw the arc ABF . Draw FG parallel to AB and 1.5 in. from it. Join FA and FB . ABF is the triangle required. The angle at the centre is always twice the angle at the circumference; thus the angle ACB is

twice the angle AFB .

(xii) To construct a triangle whose perimeter shall be equal to a given line AB , and the sides in the proportion $2:3:4$. Divide AB (Fig. 79, xii) in the proportion $2:3:4$ as shown. With D and C as centres, and DA and CB as radii respectively, describe arcs intersecting at E . Join DE and CE . Then EDC is the triangle required.

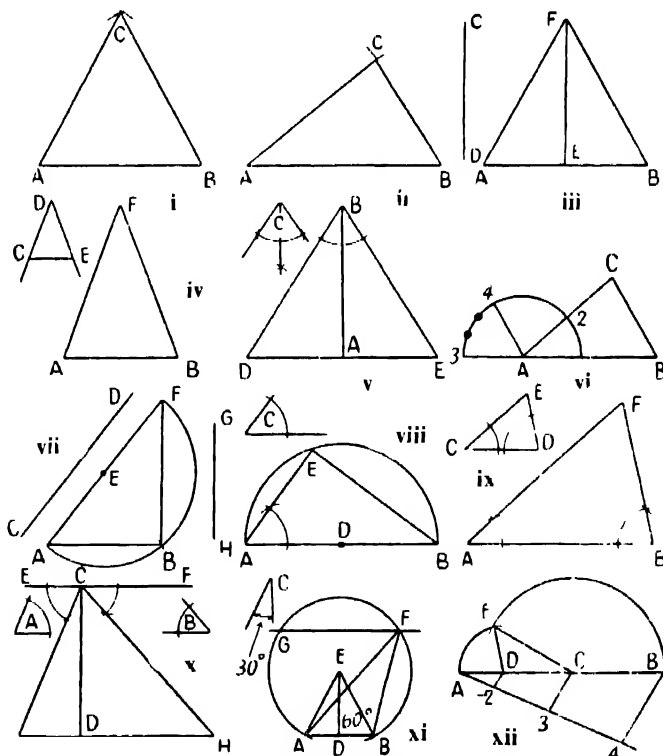


Fig. 79. Diagrams i to xii showing methods of triangle construction.

LESSON 17

Drawing Circles and Tangents

THE definitions of a circle, diameter, radius, tangent, etc., have already been given (Lesson 13, p. 2615), but the following facts should also be known:

The circumference of a circle is nearly $3\frac{1}{2}$ or, more accurately, 3.14159 times its diameter.

A straight line which bisects a chord of a circle at right angles passes through the centre of the circle. The straight line which is drawn at right angles to the diameter of a circle, from its extremity, is a tangent.

The angles at the centre of the base of a semicircle are two right angles.

The following problems may be worked out with reference to Fig. 80, i-xvii.

(i) To describe a circle passing through three given points A, B, and C. Join AB and BC. Bisect each by the perpendiculars intersecting at D. With D as centre, and DA or DB or DC as radius, describe the circle required.

This problem shows how the centre of a circle may be found by assuming any three points in its circumference, how to describe a circle about a given triangle, and how to describe an arc equal to a given arc with the same radius.

(ii) To draw a tangent to a circle through a given point A in its circumference. Find the centre B of the circle, draw the radius BA, and produce it to C. Make AC equal to AB (any convenient distance). With centres C and D, and any radius, describe arcs intersecting at E. Draw AE, the required tangent.

(iii) To draw a tangent to a circle through a given point A without it. Find the centre B of the circle, draw BA, and bisect it in C. With C as centre, and CA as radius, describe a semicircle, cutting the circle in D. Draw AD, the required tangent. By describing a semicircle on the other side of AB, another tangent may be drawn.

(iv) To draw a tangent to an arc from a given point A, in it, when the centre of the circle is inaccessible. With A as centre and any convenient radius, describe a circle cutting the arc in B and C. With B and C as centres and any convenient radius, describe arcs intersecting in D and E. Draw DE. At A draw the tangent AF perpendicular to DE.

(v) To draw two tangents to a circle to meet at a given angle (say, 66°). From the centre A draw any straight line AB. At any convenient point C in AB,

make an angle on each side of AB equal to half the given angle, 66° . From A draw AD and AE perpendicular to CD and CE respectively, and cutting the circle in F and G. Through F and G draw FH parallel to CD, and GH parallel to CE.

(vi) To draw a tangent common to two equal circles. First, for exterior tangent. Join the centres A and B. At A and B erect perpendiculars AC and BD to the line AB. Draw the tangent through C and D.

Second, for interior tangent. Bisect AB in F. Upon AF describe a semicircle, cutting one circle in I. Join AI,

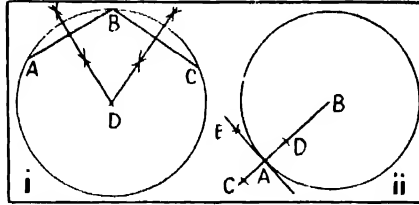
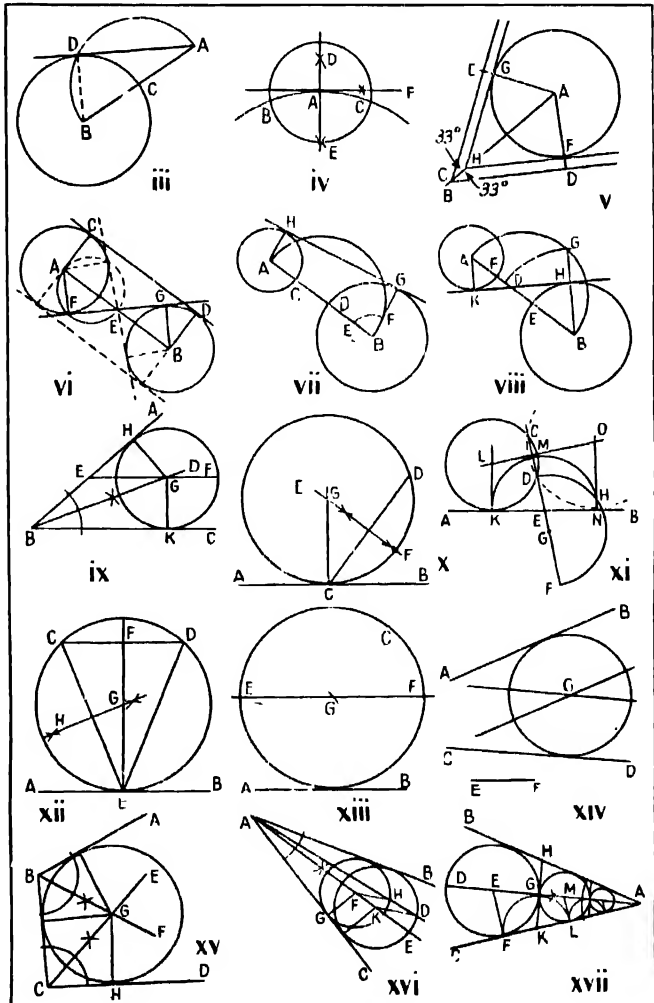


Fig. 80. (i to xvii) Construction of circles and tangents.



and through B draw BG parallel to AF. Draw the tangent through FG. Another interior and exterior tangent may be drawn, as indicated by dotted lines.

(vii) To draw an exterior tangent to two unequal circles. Join the centres A and B, and upon AB describe a semicircle. Mark off DF equal to AC. With B as centre, and radius BE (the difference of the radii of the given circles), describe an arc cutting the semicircle in F. Through F draw BG, and through A draw AH parallel to BG. Draw the tangent HG through H and G.

(viii) To draw an interior tangent to two unequal circles. Join the centres A and B, and describe a semicircle upon AB. Mark off ED equal to the radius AF of the small circle. With centre B and radius BD (the sum of the radii of the two given circles), describe an arc to cut the semicircle in G. Draw BG, cutting the large circle's circumference in H, and through A draw AK (on the other side of AB) parallel to BG. Through HK draw the tangent required. Another could be drawn in this and problem vii if the semicircle were described on the other side of the line joining the centres, and proceeding as above.

(ix) To inscribe in a given angle, ABC, a circle of given radius (say, 4 in.). Bisect the angle ABC by the line BD, and draw EF parallel to BC and 4 in from it, intersecting BD in G. With G as centre and radius 4 in., describe the circle touching the sides of the angle in H and K. The points of contact are found by drawing from G, GK and GH perpendicular to BC and BA.

(x) To describe a circle passing through a fixed point D, and touching a given straight line AB in a fixed point C. Join CD and bisect it by the perpendicular EF. Through C draw CG perpendicular to AB, and cutting EF in G. With G as centre, and radius GC, describe the required circle.

(xi) To describe a circle tangent to a given straight line AB and passing through two fixed points C and D without the line. Join CD, and produce the line to cut AB in E, and make EF equal to EC. Bisect DF in G, and draw a semicircle on DF with radius GF. At F erect a perpendicular to DF cutting the semicircle in H. Mark off EK from E on EA equal to EH. At K erect a perpendicular KL, and bisect CD in M by the perpendicular LM, which also cuts KL in L. With L as centre and radius LK draw the required circle. When AB is not parallel to CD, two circles can be drawn as shown.

(xii) To describe a circle tangent to a given straight line AB, and passing through two fixed points C and D, which are equidistant from the given line. Join CD and bisect the line in F by FE cutting AB in E. Join CE or DE, and bisect it by GH, cutting EF in G. With G as centre and radius GC describe the circle.

(xiii) To draw a circle passing through a given point C, touching a given straight line AB, and having a given radius (say, $\frac{1}{2}$ in.). Draw a line EF parallel to AB and $\frac{1}{2}$ in from it. With centre C and radius of $\frac{1}{2}$ in intersect EF in G. With centre G and radius GC describe the circle.

(xiv) To describe a circle of a given radius EF, to touch two converging lines AB and CD. At a distance equal to EF draw parallels to AB and CD intersecting at G, the centre required.

(xv) To describe a circle touching three given straight lines, AB, BC, and CD, which make angles with each other. Bisect the angle DCB by the line CE, and the angle CBA by the line BF, intersecting CE in G. From G draw perpendiculars to the three given lines, then either perpendicular is the radius of the required circle.

(xvi) To describe a circle which shall touch two given converging lines AB and AC, and pass through a fixed point D between them. Bisect the angle BAC by the line AE. Join D with A. From any point F in AE draw FG perpendicular to AC and describe a

circle touching AB and AC, and cutting AD in H. Join FH, and through D draw DK parallel to HF, cutting AE in K, which is the centre of the required circle.

(xvii) To describe two or more circles touching each other and two converging lines AB and AC. Bisect the angle BAC by the line AD. From any point E in AD draw a perpendicular to AC. With E as centre and EF as radius describe the circle touching AB and AC. Draw HK tangential to the circle. Make KL equal to KF, and at L erect a perpendicular to AC, cutting AD in M, the centre of the next circle.

The problems with which we are concerned next depend for their solution upon the following truths in Euclid :

If a straight line be a tangent to a circle, and from the point of contact a line be drawn perpendicular to the tangent, the centre of the circle shall be in that line.

If one circle touch another internally in any point, the straight line which joins their centres, being produced, shall pass through the point of contact.

If two circles touch each other externally in any point, the straight line which joins their centres shall pass through the point of contact.

Reference should be made to Fig. 81.

(i) To inscribe a circle in a given triangle ABC. Bisect any two angles ABC and BCA by lines intersecting at D. From D draw DE perpendicular to any of the sides of the triangle, then DE is the radius and D the centre of the required circle.

(ii) In a given equilateral triangle ABC to inscribe three equal circles, each to touch one side and two circles. Bisect the angles by lines which also bisect the sides in D, E, and F, and intersect at G. Inscribe a circle in the triangle GBC. Mark off GJ and GK, each equal to GH, then J and K are the centres of the other circles.

(iii) In a given square ABCD to inscribe four equal circles, each to touch one side and two circles. Draw the diagonals and the diameters intersecting at E. Inscribe a circle in the triangle EBC. With centre E and radius EF mark off EG, EH, EJ, each equal to EF, then G, H, and J are the centres of the other circles.

(iv) In any given regular polygon (say, ABCDEF) to inscribe as many equal circles as the figure has sides, each circle touching one side and two circles. Divide the figure into equal triangles, and inscribe a circle in each, as shown.

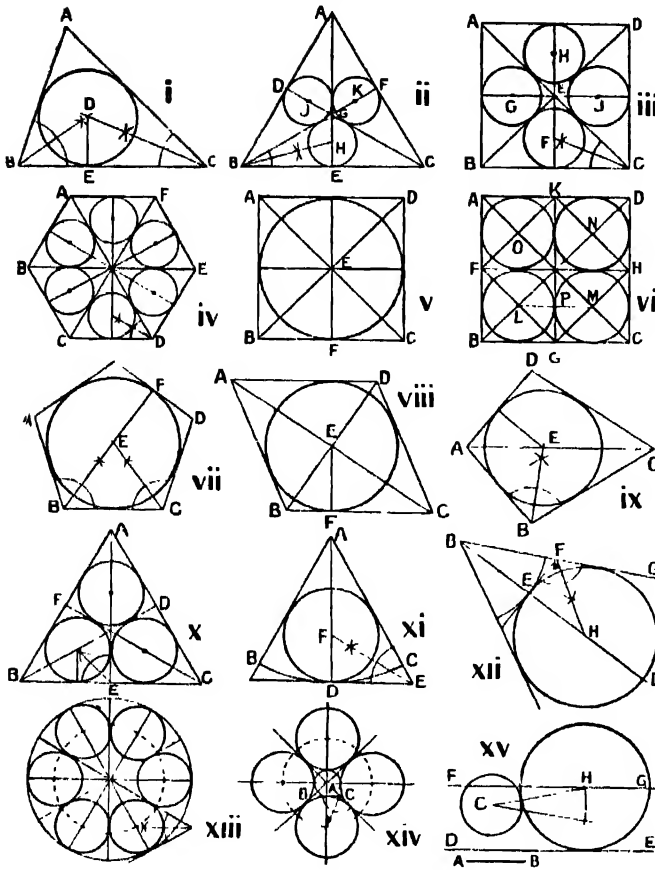
(v) To inscribe a circle in a given square ABCD. Draw the diagonals and diameters to find the centre E, and with radius EF describe the circle.

(vi) Within a given square ABCD to inscribe four equal circles, each touching two sides and two circles. Draw diagonals and diameters as before. Join F, G, H, and K. The intersections L, M, N, O, with the diagonals, are the centres of the circles. Join L and M, then LP or MP is the radius required.

(vii) To inscribe a circle in any regular polygon. Bisect any two angles ABC and BCD, then E is the centre, and a perpendicular (say, EF) from E to any of the sides is the radius.

(viii) To inscribe a circle in a given rhombus ABCD. Draw the diagonals to find the centre E, and a perpendicular (say, EF) from E to any of the sides is the radius.

(ix) To inscribe a circle in a given trapezium ABCD. Draw the diagonal AC, and bisect one of the other angles, then E is the centre, and the radius is a perpendicular to any of the sides.



(x) Within a given equilateral triangle ABC to inscribe three equal circles, each touching two sides and two circles. Bisect each of the angles by the lines AE, BD, and CF, thus obtaining three equal trapeziums, in each of which inscribe a circle as in ix.

(xi) To inscribe a circle in a given sector ABC. Bisect the angle by AD. Through D draw a tangent DE to meet either AB or AC produced in E. Bisect the angle AED by the line EF intersecting AD at F, which is the centre, and FD is the radius of the required circle.

(xii) To describe a circle to touch the arc of a sector and the two radii produced. Bisect the angle by BD intersecting the arc at E. Through E draw the tangent EF. Bisect the angle BEF by the line FH intersecting BD in H, which is the centre, and HE then becomes the radius of the circle.

(xiii) To inscribe any number of circles in a given circle. Divide the circle into twice as many sectors as circles required, and inscribe a circle in each sector. The centres of the circles to be inscribed will be found as shown by the dotted circle.

(xiv) To describe any number (say, four) of equal circles about a given circle. Divide the circle as in xiii and produce the diameters. At the point A draw a tangent BC. Then proceed as in xii. The other centres are found as shown by the dotted circle.

(xv) To describe a circle of a given radius AB to touch a given circle C and a given line DE. Draw FG parallel to DE at a distance equal to AB from it. With centre C and radius equal to the sum of the radius of circle C, plus AB, describe an arc cutting FG in H, which is the centre required.

Fig. 81. Diagrams I to xv illustrating the construction of circles.

LESSON 18

Plans and Elevations of Solids

SOLID geometry, or orthographic projection, enables us to represent geometrically on a flat surface, such as a piece of paper, which has only *two* dimensions—length and breadth—the forms of solids, which have *three* dimensions—length, breadth, and thickness. The form and position of most solids can be shown by drawing two views only—the *plan* and the *elevation*.

First consider the diagrams in Fig. 82.

In (i) it is shown how both plan and elevation can be obtained. Fold a piece of paper at right angles, and place it on a table which adjoins a wall, so that one part of the paper rests horizontally on the table, and the other part vertically against the wall. Then place, say, a rectangular box on the paper, and trace its form *abcd* on the horizontal surface of the

paper; this drawing shows the length and breadth of the object, and is its *plan*. Do not move the box, but next trace its form, *a'b'f'e'*, on the vertical surface of the paper; this drawing shows the height and length, and is called the *elevation*. The surface, or plane, upon which the box stands is called the *horizontal plane* (H.P.), and the upright surface, upon which the elevation is drawn, is the *vertical plane* (V.P.). The crease or fold of the paper, where the two planes intersect, is the *intersecting line*.

The plan and elevation are sometimes called *projections*, because each point of the object is projected or thrown upon the horizontal or vertical plane; thus, *a'* is the projection of A on the vertical plane, and the line which joins A and *a'* is called a *projector*.

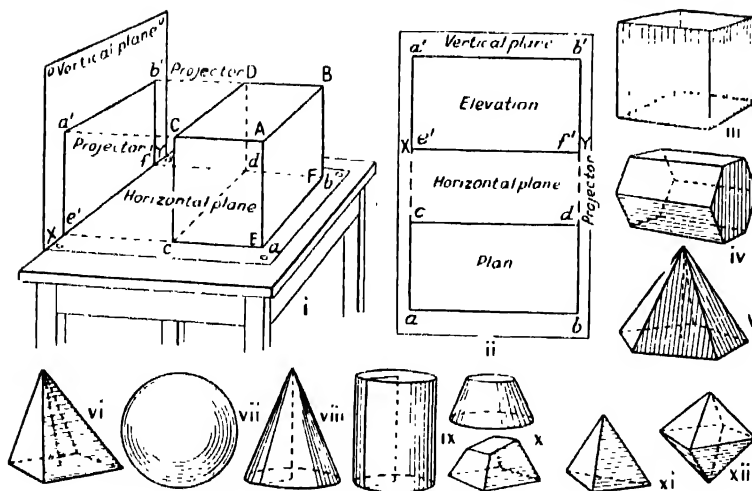


Fig. 82. Diagrams i to xii, plans and elevations of solids.

The system of lettering adopted should be noted. Thus, if B denotes an actual corner of an object, then *b* shows its plan, and *b'* its elevation (i and ii).

Definitions of Simple Solids

A *cube* is a solid contained by six equal squares (iii).

A *prism* has its two ends equal, similar, and parallel plane figures, and each of its sides is a parallelogram (iv).

A *pyramid* is a solid having a plane figure for its base, and its sides triangles, which have a common apex, or vertex (*v*). Prisms and pyramids are named according to the shape of their ends and bases; thus, a hexagonal prism has a hexagon at each end (iv), a pentagonal pyramid has a pentagon for its base, etc. (*v*). The *axis* is a line passing through the middle of the solid. A *right* prism, cone, pyramid, etc., is one whose axis is at right angles to the ends or base (iv, v, viii, ix). When the axis is not perpendicular, the prism, cone, pyramid, etc., is said to be *oblique* (vi).

A *sphere* is a solid bounded by one convex surface, every part of which is equidistant from a point within, its *centre* (vii).

A *cone* is the solid generated by the revolution of a right-angled triangle round the perpendicular (viii). The *sections* of a cone are the *ellipse*, produced by a plane passing obliquely through the cone's opposite sides; the *parabola*, produced by a plane passing parallel to the cone's slope; and the *hyperbola*, formed by an intersecting plane making a greater angle with the base than is made by the sides of the cone.

A *cylinder* is a solid generated by revolving a rectangle round one of its sides (ix).

A *frustum* is that portion of a solid next its base left by cutting off the upper part. In a cone or pyramid it is sometimes called a *truncated cone* or *truncated pyramid* (x).

A *tetrahedron* is a solid bounded by four equal equilateral triangles (xi).

An *octahedron* is bounded by eight equal equilateral triangles (xii).

A *dodecahedron* has twelve equal and regular pentagonal faces. An *icosahedron* has twenty equal faces, each one of

them being an equilateral triangle.

A *section* is the cut part, or surface of separation, of a body cut by a plane.

The following problems deal with the representation of solids in simple positions. In the diagrams shown in Fig. 83 the visible edges of the object are represented by thick lines, and the invisible edges by dotted lines.

Draw the plans and elevations of the following solids, with reference to Fig. 83:

1. A cube standing on the H.P. (horizontal plane), with one face parallel to the V.P. (vertical plane). Draw the line XY, and below it make a square *abcd* with two of its sides parallel to XY. The elevation is obtained by drawing the projectors *de'* and *cf'* perpendicular to XY, and making the square *e'f'b'a'* upon *e'f'* as shown.

2. A cube with one face on the H.P., and with a vertical face inclined at 30° with the V.P. For the plan, draw a square *abcd* with one side, as *cd*, making 30° with XY. From each angle of the plan draw projectors. Make *a'e'* equal to *ab*, and draw *a'c'* parallel to XY. Complete the elevation as shown.

3. A cube standing on an edge, with one face making an angle of 20° with the H.P., and its vertical faces parallel to the V.P. Here the elevation must be drawn first, by drawing *a'e'* at 20° with XY, and on it construct the square *a'e'f'b'*. For the plan, draw projectors from each angle. Draw *dg* at any given distance from the vertical plane, and parallel to XY. Make *da* equal to *a'e'*, draw *af* parallel to *dg*, and complete.

4. A square pyramid, 2 in. high, standing on its base, with one edge making 30° with the V.P. Draw *dc* at 30° with XY, and on it describe a square *abcd* for the plan. For the elevation draw projectors from each angle to XY, and from *e* a projector to *e'*, 2 in. above XY. Join *e'* with *a'*, *d'*, *b'*, *c'*.

The figures for problems 5 to 9 explain themselves.

5. A cylinder, 2 in. long and 2 in. in diameter lying on the H.P. with its axis at right angles to the V.P.

6. A cone, 2½ in. high and base 2 in. in diameter, standing with its base in the H.P.

7. An equilateral triangular prism, 2 in. long, with

side of triangle 1 in., lying on one of its sides, with its ends parallel to the V.P.

8. A hexagonal prism, 2 in. long, with sides of hexagon 3 in., lying on one of its sides, and axis at right angles to the V.P.

9. An octagonal prism, 2 in. long, with sides of octagon $\frac{1}{2}$ in., lying on one of its sides, with its axis at right angles to the V.P.

Problems 10 to 13 deal with solids having one or more sides inclined to the vertical plane.

10. An equilateral triangular prism standing on its end with one side inclined at 25° to the V.P.

11. A hexagonal prism, standing on an end with one side making an angle of 25° with the V.P.

12. A tetrahedron, with one face in the H.P. and one edge at 40° with the V.P. Draw bc at 40° with XY , and on it describe an equilateral triangle, abc . Join a , b , and c to the centre d . This is the plan. Draw projectors to obtain the elevation. To obtain the height, draw dd at right angles to cd . With c as centre and radius bc cut the perpendicular dd in D , when dD is the required height.

13. An equilateral triangular prism, lying on one of its rectangular faces, with its axis making 20° with the V.P. Draw fe at 20° with XY , and make fe equal to the length of the prism. At e and f , draw perpendiculars fe and ed , each equal to the edge of the equilateral triangle, and complete the rectangle $caef$. Draw ab midway between cd and ef . This completes the plan. Draw projectors for the elevation. The height is obtained by constructing an equilateral triangle Aed , of which Ab is the height. The line $a'b'$ is distant from XY a height equal to Ab .

Very often different views of an object from other standpoints are necessary to explain its true form. These views can be easily obtained by changing the position of the intersection line

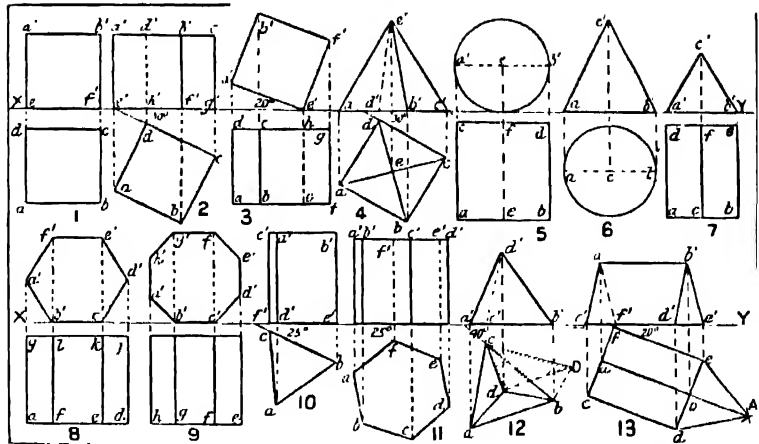


Fig. 83. Diagrams 1 to 13, plans and elevations of simple solids in geometry.

XY instead of drawing a fresh plan; and much time and labour are thereby saved. The following problems should be worked with reference to Fig. 84.

(i) Draw the plan and elevation of a hexagonal prism with one of its sides in the H.P., and its ends parallel to the V.P. Also draw a second elevation when the axis is inclined at 45° with the V.P. First draw the plan and elevation $a'b'c'd'e'f'$. Then draw $x'y'$ at 45° with XY (as if XY were turned until it made 45° with its original position, i.e. at 45° with the original V.P.) Projectors drawn as shown perpendicular to $X'Y'$ will give the required second elevation.

(ii) We now come to the representation of the circle, cone, cylinder, and sphere. Draw the plan and elevation of a circle in a plane which is vertical and parallel to the V.P. The elevation is the circle $a'b'$, and its plan the line ab , projected as shown.

(iii) A circle in a vertical plane which is inclined to the V.P. at 50° . For the plan, draw ab at 50° with XY , upon it describe a semicircle, and divide it into any convenient number of equal parts (say four) at C , D , and E . Draw perpendiculars from C , D , and E , to meet ab in c , d , and e , from which draw projectors perpendicular to $X'Y'$. Make $c'e'$ equal to ab , and bisect it by a horizontal line for the points a' and b' . Set off a distance equal to $c'e'$ or dd on each side of $a'b'$ to obtain the points e' , c' , d' , and d' . Draw the ellipse through the points thus obtained.

(iv) A cone, lying with its side in the H.P., and its axis parallel to the V.P. First draw the plan and elevation when standing upright with the base in the H.P. Then $ABbC$ is the plan, and $A'F'$ the elevation. Rotate the latter, so that $b'F'$ is on XY and the point A' at a' , then $a'b'f'$ is the required elevation. Project from a' , b' , c' , f' , to meet horizontals from A , B , C , and F , for the plan.

(v) A cylinder, with its axis inclined at 20° with the

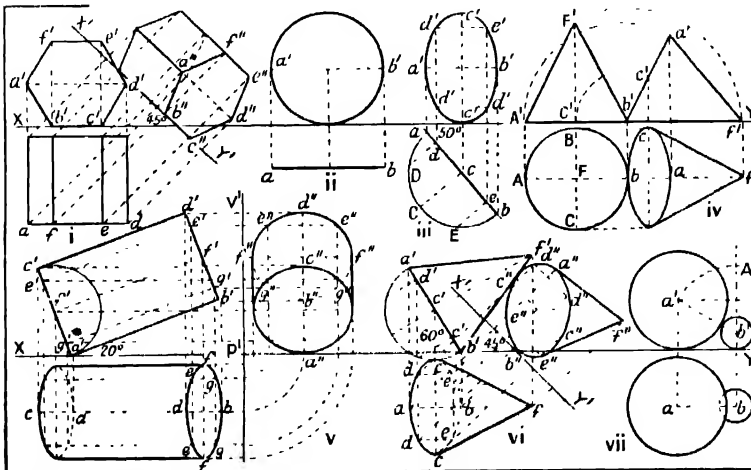


Fig. 84. Representation (i to vii) in geometry of the circle, cone, cylinder, and sphere.

H.P. and parallel to the V.P. Also, another elevation when viewed from the left at right angles to its original position. The elevation is an oblong $a'b'e'd'$ with $a'b'$ inclined at 20° with XY . For the plan, describe a semicircle on $a'e'$, divide the arc into four equal parts, and draw parallels to $a'b'$ through each division, to meet $a'e'$ and $b'd'$ in $e', f',$ and g' . From each of these points project perpendiculars to XY to intersect bc and the other lines drawn parallel to XY , and thus obtain the ellipses as in 3.

For the side elevation, draw $V'P'$ perpendicular to XY , for the side elevation of the V.P. Place $a'd'$ (the centre line) as far from $V'P'$ as bc of the plan is from XY . Also place $e'g'$, etc., similarly. This is best done by taking P' as centre and rotating the points as shown by curved dotted lines to meet XY . Draw perpendiculars from these points in XY to meet the horizontals from first elevation. Complete as shown.

(vi) A cone, with its base inclined at 60° with the H.P., and its axis parallel to the V.P. Also, a second elevation when the axis is inclined at 45° with the V.P. and its base, as before, 60° with the H.P. Draw $a'b'$ at 60° with XY and equal to the diameter of the base. Bisect it in c' , draw $c'f'$ perpendicular to $a'b'$, and equal to the axis or height of the cone. Join $a'f'$

and $b'f'$. Then $a'b'f'$ is the elevation. For the plan, describe a semicircle on $a'b'$, and divide it as before. Draw a centre line af at a convenient distance parallel to XY . Draw projectors from a', b', c', d', e', f' , set off the ordinates on both sides of af , and draw the ellipse and sides of the cone.

For the second elevation, draw $X'Y'$ at 45° with XY , and project perpendiculars to $X'Y'$ from each point in the plan. Draw $c'e'$ parallel to $X'Y'$, and the same distance from it as c' is above XY . Each of the points $d', e',$ etc., is respectively the same distance from $X'Y'$ as $a', d',$ etc., is above XY . Complete as shown.

(vii) Two spheres whose radii are as 3 : 1, lying in contact with each other on the H.P., and the line joining their centres being parallel to the V.P. Draw one circle (say, the smaller) on XY for the elevation of one sphere. Draw its vertical diameter, and produce it so that Ab' is equal to the sum of the radii of the two spheres. With b' as centre and $b'A$ as radius, describe an arc Aa' to cut a horizontal line drawn at a distance from XY equal to the radius of the other (larger) sphere in the point a' . With a' as centre describe another circle for the elevation of the other sphere. For the plan, draw projectors, and complete as shown. The line ab must be parallel to XY in this case.

LESSON 19

Sections of Solids

An architect often wishes to show the internal construction of a building, or an engineer the inner works of a machine. To represent this one must imagine the building or machine to be cut through by a vertical or horizontal plane, and a drawing made of the cut or section. The drawing would indicate the position, arrangement, and thickness of the walls, floors, etc., or the parts of the machine.

It is usual to present the section or cut part of the object by a series of parallel lines making an angle of 45° with the intersecting line XY .

Care should be taken to distinguish between the sectional plan and elevation and the true shape of the section. The sectional plan is the appearance of the object when viewed vertically from above, with the upper portion removed; the sectional elevation is the appearance when viewed horizontally forwards, with the front part removed; the true shape of the section is seen when the section is looked at perpendicularly to the plane of section. Sometimes a part of the portion removed is indicated by dotted lines for clarity.

In Problems 1 to 5 the sections are those made by vertical planes parallel to the V.P. or by horizontal planes parallel to the H.P.; and in Nos. 6 to 10 by planes inclined to the H.P. but perpendicular to the V.P. Reference should be made to Fig. 85.

1. Given the plan of a cube cut by a vertical plane ab , draw the sectional elevation. Project from c, f, d, e for the elevation, making $c'e',$ etc., equal to the edge of the cube, and join. From a and b draw projectors to the elevation for the section, and $a'a'b'b'$ is the section or cut part. In this case, as also in problems 2 to 5, the true shape of the section is shown, because

we are supposed to be looking perpendicularly at the section.

2. The elevation of a sphere cut by a horizontal plane $d'e'$ is given. Draw the sectional plan. Project from c' the centre, and from a' and b' the ends of the horizontal diameter through c' to $c, a,$ and b , and describe the outer circle for the plan. From d' and e' draw projectors to meet ab in d and e . With c as centre and cd as radius, describe the inner circle for the section.

3. Given the plan of a hexagonal pyramid, cut by a vertical plane hk , draw the sectional elevation. Draw projections from each point, fix g' at a height above xy equal to the height of the pyramid, and join the points. Project and join $h, k, l, m,$ to $h', k', l',$ and m' , to obtain sectional elevation.

4. The plan $abcd$ of a cylinder is given, and is cut by a vertical plane ef . Draw the sectional elevation. Draw projectors and obtain the elevation of the solid. To obtain the width $e'e'$ or $f'f'$ of the section, draw a semicircle on ad , then eg is half the width of the section. Set off $a'e'$ equal to eg on either side of $a'b'$ to obtain the points e', e', f', f' .

5. The elevation $a'b'c'$ of a square pyramid is given, with one of its triangular faces in the H.P. and its axis parallel to the V.P. It is cut by a horizontal plane $d'e'$. Draw the sectional plan. Draw af at any convenient distance parallel to XY , and project from $a', b',$ and c' , for the plan, making cg and bh each equal to $b'e'$, an edge of the square base. For the section, draw projectors from d' and e' , then $ddee$ is the sectional plan.

6. The elevation of a cube is given, and is cut by a plane $a'b'$ inclined to the H.P., but perpendicular to the V.P. Draw the sectional plan. Draw projectors and obtain the plan of the cube. The section is obtained as shown.

NOTE. In problems 6 to 10 the sections are not their true shape, because we are not looking perpendicularly to the section plane.

7. The elevation of a sphere is given, which is cut by a plane $a'b'$ inclined to the H.P. Draw the sectional plan. Obtain the plan of the sphere as in 2. Bisect $a'b'$ in c' . Draw the projectors from $a', b',$ and c' . Make ec equal to $a'e'$ or $b'e'$. Draw the ellipse through abc for the section.

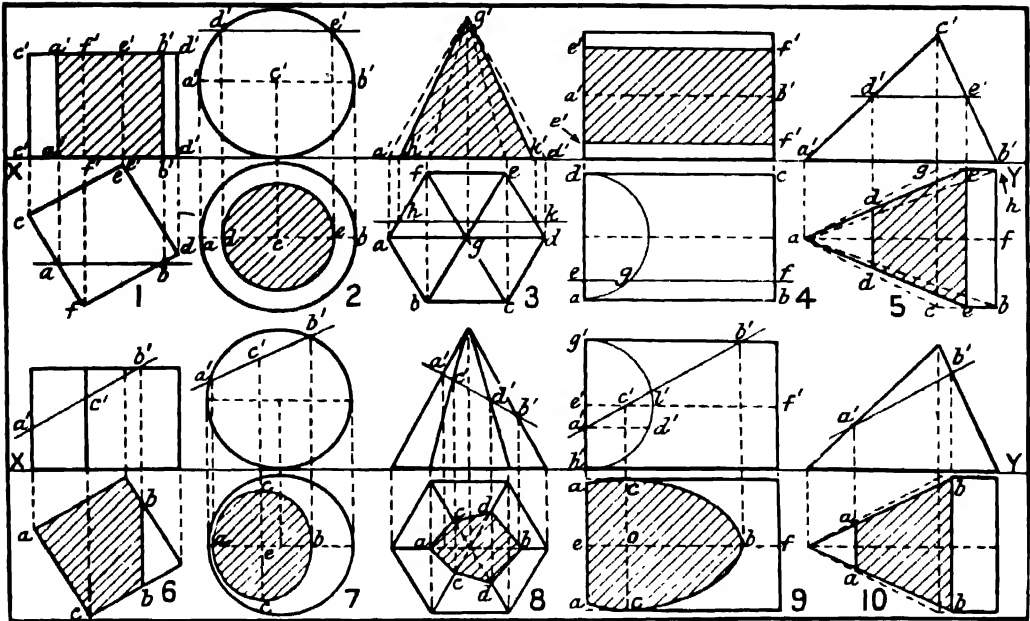


Fig. 85. Sections and sectional plans (1 to 10) in the representation of solids.

8. The elevation of a hexagonal pyramid is given, and is cut by a plane $a'b'$ inclined at 30° to the H.P. Draw the sectional plan. Obtain the plan and draw projectors from a' , b' , c' , d' for the plan of the section as shown.

9. Given the elevation of a cylinder, which is cut by a plane $a'b'$ inclined at 30° to the H.P. Draw the sectional plan. Obtain the plan, in which draw the centre line ef for the plan of the axis. To obtain the width ea of the section, upon $g'h'$ describe a semicircle, and through e' draw $e'f'$ parallel to XY for the elevation of the axis, which is cut by the section plane in c' . Through a' draw $a'd'$ parallel to $e'f'$, then $a'd'$ is the width of half the section at the left-hand end of the cylinder. Draw projectors from b' and c' . Make ea (on both sides of ef) equal to $a'd'$, also oc , oc , each equal to $c'f'$, half the width of the section at c' . Draw the curve through a , b , c , d , e , and join aa , which completes the sectional plan.

10. The elevation of a square pyramid is given, lying as in problem 5, and is cut by a plane $a'b'$ inclined to the H.P. at 30° . Draw the sectional plan. Obtain the plan as in 5. Draw projectors from a' and b' , and complete the sectional plan as shown. The dotted lines in the plan indicate the upper portion removed.

True Shape of a Section

The next exercises show how to find the *true shape* of a section. Reference should be made to Fig. 86, page 2630.

1. A cube stands with one of its faces in the H.P. and a vertical face inclined at 30° to the V.P. The cube is cut by a plane $a'b'$ inclined at 75° with the H.P. and perpendicular to the V.P. Draw the plan, elevation, and true shape of the section. Draw the plan of the cube, so that the edge ef is inclined at 30° with XY , and project the elevation. Then draw the section plane $a'b'$ so that it cuts the cube at an inclination of 75° with XY . (As no definite position of the cutting

plane is indicated in the data, $a'b'$ may be drawn anywhere through the elevation, as long as it is inclined at 75° with XY .) Draw projectors from a' and b' to the plan, then if the left-hand portion be removed, $aagbb$ is the sectional plan.

To obtain the *true shape* of the section, project at right angles from each point a' , g' and b' , where the section plane cuts the elevation, and transfer the widths of the section from the plan, thus, make $b'h'$ equal to bb , $a'a'$ equal to aa , etc. Then $a'a'g'b'b'$ is the true shape of the section. Or project from the plan and transfer the distances from the elevation, so that $h'g'$ is equal to $h'g'$, and $g'b'$ equal to $g'b'$, then $a'a'g'b'b'$ is the true shape of the section. In the first method note that $m'n'$ is equal to mn , and $a'm'$ equal to am . It is not necessary to use both methods, only the one which is the more convenient.

2. A square prism, with its axis horizontal, but perpendicular to the V.P., and a face inclined at 25° to the H.P., is cut by a vertical plane ab inclined at 45° to the V.P. Draw the sectional elevation and the true shape of the section. Draw $b'e'$ at 25° to XY , and construct the square for the elevation of the object. Project from each corner for the plan of the same. Draw ab (anywhere in this case, so long as it makes 45° with XY), and project from a , c , d , b , to the elevation so as to obtain the sectional elevation $a'a'c'b'd'$. For the true shape of the section, draw horizontals from a' , a' , c' , b' , d' , and at any convenient distance, in order to avoid confusion, draw $a''e''$ parallel to $a'a'$. Make $e''c''$ equal to ac , $c''d''$ equal to cd , $d''b''$ equal to db , and through f'' and g'' draw parallels to $a''e''$ to intersect the horizontals. Join $a''a''c''c''b''b''d''d''$ for the true shape of the section.

Another method to obtain the true shape of the section. Draw $X'Y'$ at any convenient distance from and parallel to ab . Project from a , c , d , b , perpendicular to $X'Y'$. Make the points a' , a' , c' , b' , d' respectively the same heights above $X'Y'$ as a , a , c , b , d are above XY . Join the points thus obtained, and $a'a'c'b'b'd'$ is the true shape of the section.

As students often find the projecting of these sectional views somewhat troublesome, it would be a good help to draw the complete elevation of the object on $X'Y'$, and either rub out the removed part or represent it by dotted lines as shown in 2.

3. Given the plan of an octagonal pyramid cut by a vertical plane ab . Draw the sectional elevation and true shape of the section. Draw the elevation, and

project from the points a, c, d, e, b to determine a', c', d', e', b' in the elevation. Join the latter points, and the sectional elevation is complete. The elevation of the point d' is obtained by drawing a side elevation of the pyramid projecting from d to $V'P'$, turning d into XY , and erecting a perpendicular to meet the outside edge of the pyramid at d''' . Through d''' draw $d'd''$ parallel to XY to fix the point d' in the sectional elevation.

To obtain the true shape of the section, set off on XY , $a'e'$ equal to ac , $c'd'$ equal to cd , etc., erect

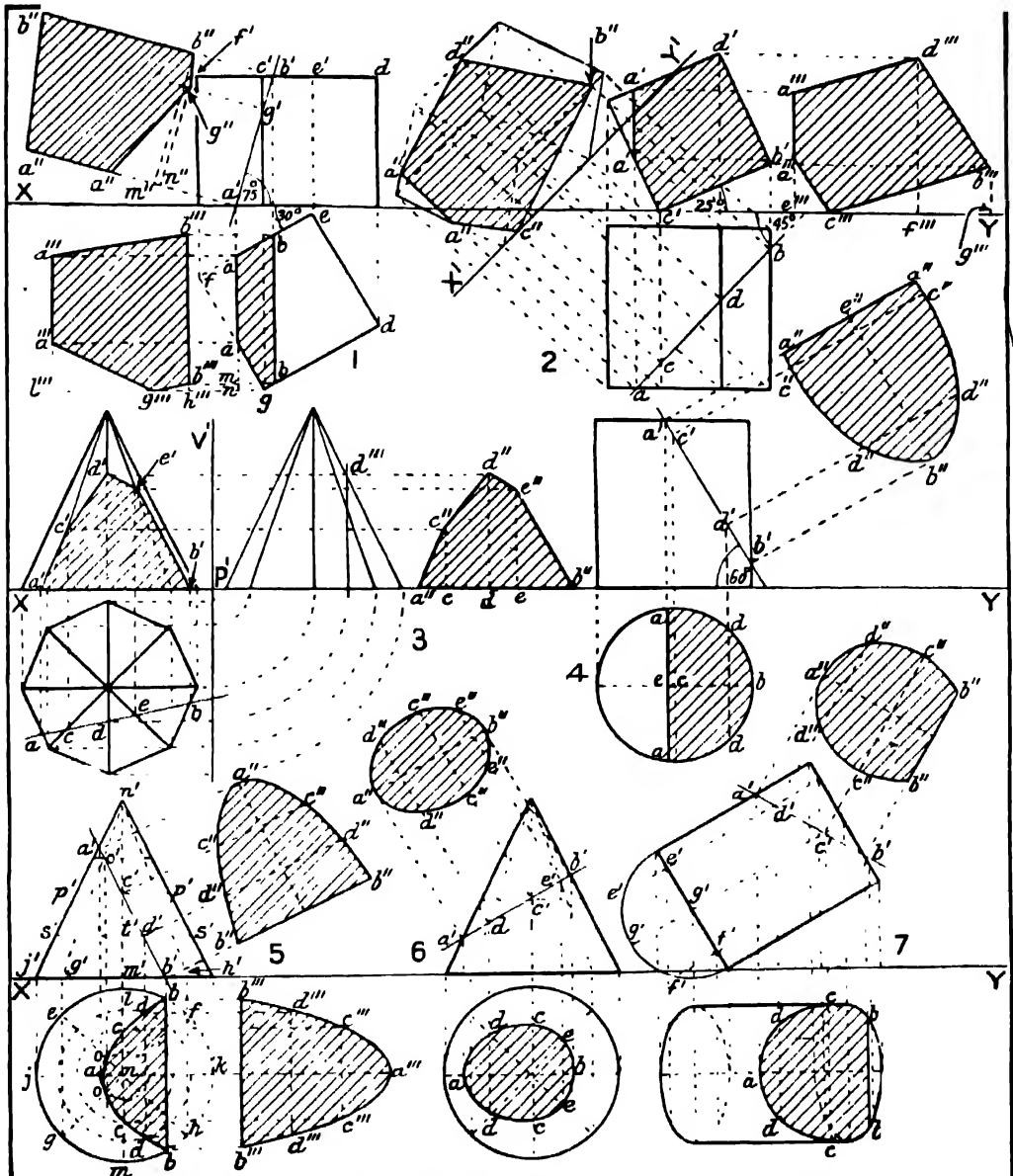


Fig. 86. Exercises (1 to 7) showing how to find the true shape of a section.

perpendiculars from c, d, e , to meet horizontals from c', d', e' . Join the points a'', c'', d'', e'', b'' , which give the true shape.

4. The elevation of a cylinder standing on one end is given, which is cut by a plane $a'b'$ inclined at 60° with the H.P. Draw the sectional plan and the true shape of the section. The plan of the cylinder is a circle. Project from a' and complete sectional plan as shown.

To obtain the true shape of the section, find the centre c of the circle, and take any convenient points d, d' in the circumference. Project from c, d , and d' to $a'b'$, the elevation of the cutting plane. Draw a centre line $b'e''$ at any convenient distance from and parallel to $a'b'$. Project from a', c', d', b' , make $a'a''$ equal to aa' , $c'c''$ equal to the diameter through c , and $d'd''$ equal to dd' . Draw the curve through the points thus obtained, and $a''b''a''$ is the true shape required.

5. Given the elevation of a cone standing on its base, and cut by a plane $a'b'$ parallel to its side. Draw the sectional plan and true shape of the section. The plan of the cone is a circle, in which draw the diameter jk parallel to XY , and the other diameters eh, fg, lm , so as to divide the plan into (say, eight) equal parts. Obtain these lines on the elevation, then the section

plane cuts them in the points $a', o',$ and c' . Point a' is on line $j'n'$, therefore its plan is on jn at a , as projected; point o' is on line $g'n'$, and its plan is therefore on gn at o ; and the corresponding point on the farther side of the cone is on en at o . Since point c' cannot be projected vertically, as regards the distance of its plan on either side of jk , through c' draw $p'p'$ parallel to XY , to represent the elevation of a horizontal section through c' , then $c'p'$ is the distance of c from jk on either side. Also, we do not know how far the plan of d' is both sides of jk . Therefore, imagine a horizontal section through d' , then $s's'$ is its elevation, and $t's'$ is the distance of d from jk in the plan. Point b' is on the circumference of the base, and therefore its plan is on the circle at b . Draw the curve through b, d, c, o, a, c, d, b , and join bb , which completes the sectional plan.

The plan of the points $a', c',$ and d' might be found by drawing circles for the plan of each horizontal section through those points, then projectors from each point to meet the circles respectively will give the plan of each point as shown.

For the true shape of the section, two methods (6 and 7) are shown, which are constructed by a method similar to that used in 2 and 4.

LESSON 20

Principles of Pattern Design

DESIGN is a somewhat vague term. In its broadest sense it can be defined as the evidence of intention, in any achievement of human hand and brain, as opposed to accident.

More particularly the term is applied to the plan for, or the planning of, a work of art, including every branch of art as applied to industry. In this sense it takes into account not only purely aesthetic considerations, such as form, colour, line, and decorative effect, but also the inherent qualities and limitations of the material to be used, the position where the designed object will be placed, and the purpose for which it is designed.

Standards of what is good and what is bad in design change continuously, just as inevitably as fashions in taste change. Designers in the 20th century have come to rate fitness for purpose very high among the essentials of good design. It is recognized that beauty comes automatically to any object made by man if its suitability for its purpose is perfect. Thus a well-made spade is beautiful because every line of its construction has been born of necessity; and the same can be said of a sailing yacht or an aeroplane. However ornamentally carved the seat of a chair may be, it is badly designed if it is uncomfortable to sit on. To beautify the handle of a table-knife so that the ornament hurts the fingers when the knife is used is a ridiculous misuse of design.

Possibly the pendulum of taste has swung too far in the direction of stark fitness for purpose, but present taste is an inevitable reaction from the rank excess of ornament in

which Victorian and Edwardian designers indulged, at a time when the term "design" was accepted as almost synonymous with "ornament." At least the reaction has allowed us to discover once again the beauty of unadorned surfaces.

In this Course we have not the space to deal with the wider and more specialised fields of creative design, such as design for pottery, furniture, or costume. Our Lessons on design are closely related to those on drawing, and are therefore concerned primarily with the making of ornamental patterns, of the kinds used for textiles, wallpapers, or carpets, or in typography and bookbinding.

Repetition, Rhythm, Contrast

The basic principles will be readily understood by reference to Fig. 87 (p. 2632). All are repeating patterns, *repetition* and *rhythm* being basic elements in pattern design. Another basic element is that of *contrast*.

No. 1 offers both repetition and contrast in their simplest form, a unit consisting of two stripes of equal height and width, one black and one white, repeated indefinitely. Its rhythm is like the *pom-pom* of a monotonous drumbeat.

But if the width of the stripes is varied a little, as in No. 2, increasing the contrast within each unit of repetition, a more acceptable rhythm confronts us at once.

It is instructive to the beginner to look closely at various repeating patterns on wallpapers, carpets, and other fabrics, and discover in each case exactly what the repeated unit consists of.

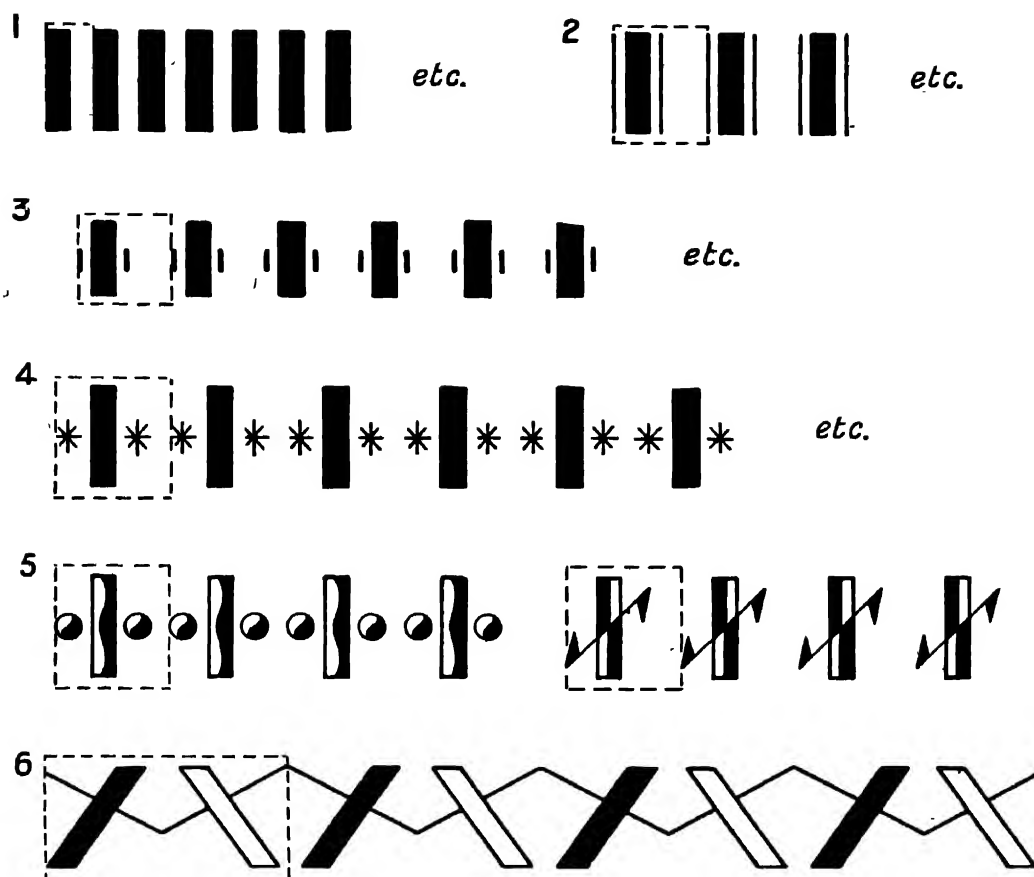
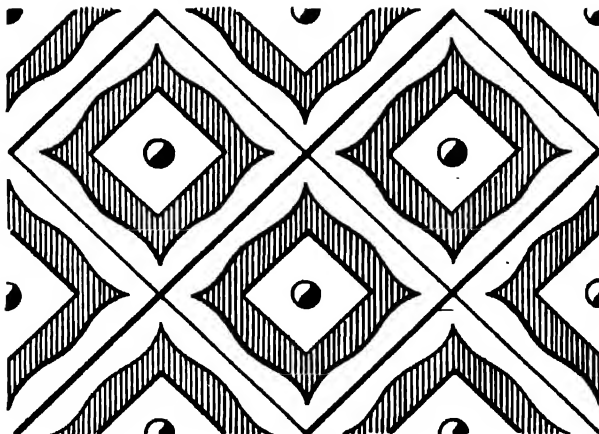


FIG. 87. EXAMPLES OF REPEATING PATTERNS illustrating the element of contrast by means of variation in tone, width, height, character, direction, etc. In examples 1 to 6 the unit of repeat is indicated by a dotted line.



Contrast, or variety, can be introduced within a unit in many ways. You can have contrast in tone (No. 1), width (No. 2), height (No. 3), shape (No. 4), character (No. 5), direction (No. 6), and colour, or any or all of these in combination (No. 7).

Mention of contrast in colour raises an interesting theme, for it must be realized that every colour has its opposite or complementary colour. The complementary to a colour is a mixture of every other colour in the spectrum. Reduced to practical terms, this means that the complementary of each of the three primary colours red, blue, and yellow are respectively blue-yellow (green), red-yellow (orange), and red-blue (purple). Green, orange, and purple are secondary colours. Any mixture of all three primary colours, in any proportion, is called a tertiary colour (all greys and browns).

It is a tendency in every bright primary or secondary colour to set up its complementary in any colour adjacent to it. If you place together red and green of equal strength, the red will make the green look greener, while

the green will make the red look redder ; and the two colours clash. To avoid this, a primary colour is best contrasted with a tertiary. A bright red can be harmoniously placed in juxtaposition to a green-grey ; the green-grey will look all the greener, but it will not clash.

This, then, introduces another useful element of contrast--that of a bright colour with a quiet colour. It also implies that harmony in colour relationship which is another essential in good design ; or, if it is not essential, seeing that colour does not necessarily enter into every pattern, at least it is essential that all discordant colour relationships be avoided. So if you *do* use colour, remember that the most harmonious contrast will be of a primary or secondary colour with a tertiary form of its complementary. This is put forward only as a guide, rather than as an inflexible rule. Your choice of colours will depend on your own judgment and taste, as well as on the purpose for which you are designing ; it might well be desirable for certain purposes that *all* your colours should be as bright as possible, shouting aloud merrily together.

LESSON 21

Ornamental Forms in Geometrical Design

ALTHOUGH geometrical ornament is more abstract than that founded on natural forms, yet it is the oldest, as is shown by the primitive art of savage races of past and present times. Probably sewing with a thread suggested the zigzag line, and the wave the wavy line ; woven work may have suggested reticulated patterns, and plaited hair the plaited band ; the combination of dots at regular intervals suggested the polygons or pointed stars. The gradual development of these original geometrical forms led, finally, to such forms as are seen in the guilloche in Moorish panelled ceilings, and in Gothic tracery (see Fig. 88, this page and page 2634).

Three Groups

Geometrical ornament may be generally divided into three groups ; first, when the ornament is in bands or borders, as in vi ; secondly, when it is repeated in patterns over an unlimited space, as in diapers, i ; and thirdly, when the ornament fills an enclosed space, as in panels of various shapes.

It will be seen that the square net has been used in i, the diamond in xi, and the triangular net in x. These different nets can be easily and accurately constructed by

means of the T-square and of set-squares of 45 deg. and 60 deg.

In i and ii are shown examples of *all-over* patterns, as they are sometimes called. These designs may form construction lines for richer patterns for carpets, tapestry, ceilings, etc. xi suggests arrangements for parquet flooring. ii and iii are similar to tiling arrangements used for roofs, and are *scale* designs.

Bands or borders with square net foundations are not limited with regard to length and are generally narrow, ribbon-like ornament. The principal patterns in this group are : the fret, as in x ; chain, as in xii ; interlaced patterns, as in v and ix ; the guilloche, as in iv ; the Greek wave scroll, as in xiv.

Borders are used for enclosing ceiling, walls, floors, panels, on certain architectural constructions, and on the abacus and plinth of columns. They are also used as the hem or border of

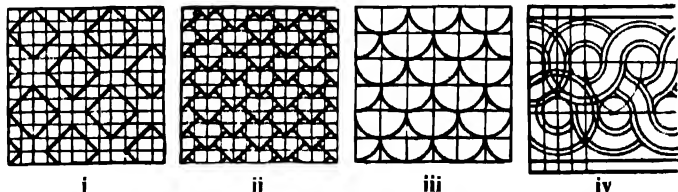


Fig. 88. GEOMETRICAL ORNAMENT. Diagrams i to iii, all-over patterns on square foundations ; diagram iv, the guilloche. This figure is continued in page 2634.

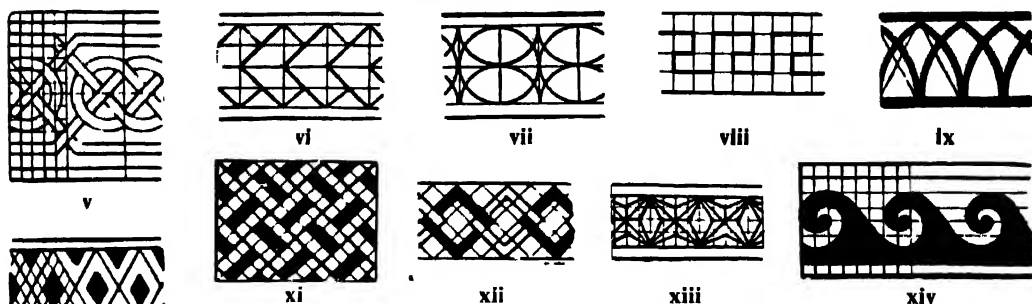


Fig. 88, continued from page 2633. GEOMETRICAL ORNAMENT. Diagrams v and ix, interlaced patterns: viii, simple Greek key pattern: x, the fret: xi, suitable also for parquet flooring: xii, the chain: xiii, Greek wave scroll, xiv.

garments, carpets, and other textiles, on the rims of plates, in typography, etc.

The fret is specifically Greek ornament. Greek vase-painting and architecture gave rise to the variations of the pattern. Among the Romans the fret was used for mosaics on floors. In the Middle Ages this pattern was seldom used, but the Renaissance revived it in its ancient application, and made new combinations.

The Greek *wave scroll* is shown in xiv. The line of this pattern divides the surface of the border into two parts, which in flat ornament are coloured differently. In plastic work the lower part projects. This border is suitable for shields, plates, friezes, cornices, tablets in architecture, etc. Examples of borders drawn on an equilateral triangular foundation are shown in ix and x.

Many different shapes, such as the triangle,

the rhombus or diamond, the hexagon, etc., all make perfectly fitting diapers, as shown in Fig. 89. Many designs for parquetry and marquetry can be founded on these shapes.

Enclosed ornament is decoration designed to fill definite bounded space, such as a square or a circle. The space is called a "panel." Besides the regular polygons, the ellipse, the lunette (or semi-circle), and various forms of the spandrel, the lozenge (or diamond), and the triangle are most commonly used as panels. When the enclosed space has the design arranged symmetrically on both sides of one axis, the panel is suitable for a vertical position. When it is developed regularly in all directions from the centre of the shape, and is symmetrical to two or more axes, the panel is suitable for a horizontal position. Examples of square panels are given in Fig. 90.

The two diagonals and the two diameters are the lines on which the decoration of the square is naturally based, and they form an eight-rayed star, with rays alternately of unequal lengths, dividing the figure into eight equal spaces. A commonly used design is the *uraniscus* (i), an ornament used in the coffers of Greek ceilings; the rays were gold on a blue ground. Pattern ii is an example of inlaid work of the 13th and 15th centuries, while iii is the planning-out for a tile design used in medieval times, but trifoliated forms were in some instances added to this linework.

Another decoration for squares is that in which the square is subdivided into separate spaces, as in iv. This

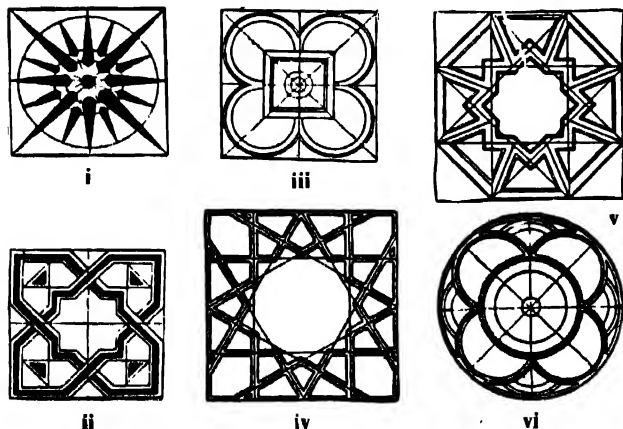
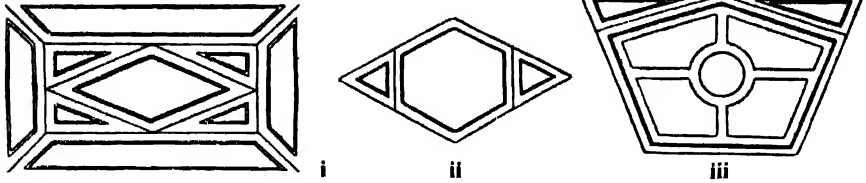


Fig. 90. Geometrical designs for panels.

Fig. 91. i, geometrical design for oblong panels; ii, the lozenge shape; iii, the trapezium.



method is much used for panels in ceilings. The panelling in iv is constructed by dividing the square into 16 smaller squares, then drawing lines from the middle points of the sides of the large square at an angle of 60 degrees.

Octagonal panels can be easily constructed within the square, as shown in (v), or within a circle (vi). Diagonals and diameters intersecting give a great variety of subdivisions.

Hexagonal panels are best constructed within a circle, and can be subdivided in a similar manner to the octagon. Many variations of

the six-pointed star can thus be obtained.

A circular shape is usually subdivided by lines radiating from the centre; or it can be divided into zones, with each belt-like band decorated independently. The subdivision formed by means of arcs, as in vi, is very suitable for this shape, especially when required for tracery.

The usual subdivision of an oblong panel is shown in Fig. 91 (i).

Trapezium shapes can be divided as indicated in iii. The rhombus or lozenge shape is usually subdivided as shown in ii.

LESSON 22

Pattern Design for Industry

It was stated in Lesson 20 that among the considerations to be taken into account by designers were the inherent qualities and limitations of the medium. Therefore the designer who wishes to become an expert must closely study his material and know thoroughly how his design is to be carried out. Then he is able to use the natural qualities of the material, which is the surest way to create beauty. Therefore, become well acquainted with the production side of designing.

If you wish to be what is called a commercial art specialist, study typography and process work generally, and get to know the inside of a modern printing firm's premises. Learn how your drawings will be reproduced and by which method, and adapt your designs to meet with the wishes of your client as to cost of production.

A designer of textiles must understand the machinery by which fabrics are woven or printed. The size of the repeats should be carefully noted and the number of colours selected with care.

Calico printing is much used in modern manufacture with many charming designs, and there is a large demand for new designs for printed textiles. Much good work is done by block printing. This work is within reach of all competent artists.

Carpets need a special kind of design, dominated by squareness, for they are woven in square or diagonal lines and no excessive use of curves is desirable. The masses must be broader than for textiles.

Wallpaper designing, again, is a highly specialised art. Wallpapers are printed from rollers and the average breadth of the printing is 21 inches. Much has been done to improve the standard of design, but there is still a tendency to rely on highly naturalistic patterns which are not true decoration. Just as it is bad design to cover a knife handle with projecting decoration which interferes with its proper use, so it is wrong to attempt to turn a flat wall surface into an outdoor arbour covered with brilliantly coloured climbing flowers among which impossible animals or brightly hued birds disport. In general it is a wiser course to keep wall decoration to quiet and unobtrusive patterns, so that pictures may gain interest from their surroundings.

Reserve more lively decoration for curtains, hangings, furniture coverings such as chintzes, cushions, and the like. In materials such as are used for these purposes, fancy can be given full range, and when tasteful colour is added to good design, the result is charming.

The basis of textile designing is repetition. The earliest decoration of fabrics was by sewing and embroidery, and these were followed by plaiting in various colours. All these arts had a geometric origin. With the development of weaving, the scope of the designer was enlarged, and now modern machinery has immeasurably widened the field of the artist. Fitness enters into the question in every design.

Dress materials should be of a daintier, lighter character than materials suitable for, say, a chair cover. Some years ago there was

an amazing outbreak of bad taste in women's dress materials; a foible of fashion that went to monstrous lengths. It was a common and deplorable sight to see a heavily built lady promenading with enormous flowers adorning her broad back. A rich material, such as silk, should have its natural beauty left untouched as far as possible, and wide spaces should be left without ornament. Some of our grand-

mothers wore lovely silks ornamented with tiny delicate sprig patterns, often embroidered by hand. The cheaper modern materials stand much closer design with more crowded motifs, though even in these over-elaboration should be avoided. Charming results can be obtained by repetition of tiny motifs

Three suggestions for such patterns are seen in Figs. 92-94. As can be seen, the elements are simplicity itself, and yet if allied to harmonious colour the results would be pleasing. Fig. 92 is merely an arrangement of dots, circles, and what might be called a star. If three colours were used in the printing—lilac for circles, and a grey-blue for the stars, with a rose

colour for the dots on a cream ground, the arrangement would look well, especially for a cotton fabric. Fig. 93 is a design that might make a pattern for a material such as that used for ties. Quiet colours would suit best, such as a dark blue ground, with the pattern worked in a quiet green, the spots an unobtrusive red. The leaf motif (Fig. 94) would take little ingenuity to fit with colour. A green on a light brown background would suffice. The more elaborate pattern (Fig. 95) would be very suitable for a printed muslin or some similar fabric. It will be noticed that the repeat is more complicated. The flower motif is changed in the centre of each line of the repeat which is in a triangular base. The design running up each side of the triangular grid is the same in every repeat. It was based on the drawing of

the forget-me-not shown in page 2593. The centre motifs are based on the marigold and cornflower in page 2592.

The student should study the construction of these sketch designs, and then make others on similar lines using his own studies of flowers for motifs. There is no limit to the number that can be designed by an enthusiast. The sketch in colour (Plate facing p. 2613) is based on what is known as a drop pattern. It will be seen that the repeat falls half-way down each side of the grid. Many designs are formed on these lines. In general, it is wise to work out designs with what is called body colour, in which Chinese white is mixed with the pigment; or in the semi-opaque "poster" colours, sold in small bottles. The colours are then of a flatter and more consistent quality.

A very fascinating and easy way to try out your own design is by printing from blocks cut from lino. The outfit is comparatively inexpensive, the tools are few, and most of the apparatus required is easy to come by. Some plain brown linoleum can be bought fairly cheaply. Most artists' colourmen stock it, though it is sometimes cheaper to get hold of remnants at a furnishing shop. It should be soft and not brittle. You will need some gouges and a sharp knife (Fig. 96). Several gouges of different widths and depths are advisable and a slip of sharpening stone should be procured. A blunt tool is liable to tear the lino and give a rough edge to your pattern. A beak-shaped knife is

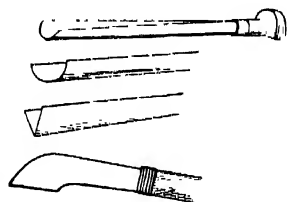


Fig. 96. Tools for making lino cuts: three gouges and a sharp knife.



Fig. 95. Flower and leaf design for a thin printed fabric.

advantageous but a sharp, well-pointed penknife will do very well. A quite serviceable gouge can be contrived from old umbrella wire, sharpened at one end. Now get out your drawing materials, paper, pins, pencil, drawing-board, T-square, and ruler. Begin by constructing a simple pattern, drawing out the lines of the repeat first with the utmost accuracy. Then proceed with your design; a suggestion which should prove helpful is given in Fig. 97.

For the first attempt, plan to use just one colour, say a good brown on a plain calico.



Fig. 97. Lino cut showing an interlaced flower and leaf design suitable for a fabric border.

If the design is small, it is not essential to worry about the width of the material, but if the pattern is larger, then the repeat should fit perfectly into a division of the width; careful measurement will do this. When satisfied that the design is satisfactory, trace the unit several times on tracing paper. Now transfer it to the lino, using a piece of typist's duplicating paper. Place this blue paper under the tracing, and pin both papers down over the lino. If the printing is to appear on the fabric the same way round as the design, the tracing must be reversed. Then go over the lines with a steady pressure, taking care not to injure the surface of the lino by undue pressure. When the tracing is complete, remove the pins and papers ready to begin on the cutting.

The surface of the lino can be covered with Chinese white before tracing. This makes the work a little easier to see, but it is not entirely necessary. The tools being well and truly sharpened, begin cutting, using the knife or V-shaped gouge for the edges of the pattern. Be very particular to avoid what is known as undercutting (Fig. 98); this will mean that the edges will break down under the pressure when printing. Good cutting should have slopes which give firm support and good wear. After the edges are all cut, clear away the unwanted pieces with the larger round gouge. Cut out the shape of the repeats so that the whole piece of ornament will print clear of obstructions.

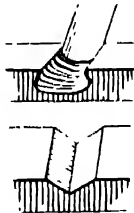


Fig. 98. Upper: fault of undercutting; lower: correct cutting.

Now take a piece of plywood at least a quarter of an inch thick to back the lino strongly. Place the plywood flat on the table or bench, and pencil upon it the edges of the shaped lino. Then with a fret-saw cut the wood to fit the back of the lino. A light small clamp will help in this. See that the fit is as perfect as possible, and then roughen, with a knife or rough file, the back of the lino and the surface of the plywood. Glue the two together and place under some heavy weight for a day. The block is now ready for printing, but for safety's sake mark "TOP" on the top end of the block.

A strong table or bench with a good smooth surface is required for printing. Spread over the table some sheets of newspaper of even size and over this some felt or old blanket. The fabric should first have been washed, well rinsed, and then ironed. Pin out the fabric evenly and smoothly over the blanket, taking care to place the edge on which printing is to begin parallel with the edge of the table, and get the colours ready. Fabric inks in tubes can be bought in many shades of colour from most artists' colourmen and they can be mixed together. They are fixed and the fabric can be washed if ordinary care is taken in the process and no soda or strong soap is used.

Making Impressions

First squeeze out the colour on to a slab or piece of thick glass and work the colour with a roller until the surface of the roller is evenly laden and the ink well distributed over the slab. A gelatine roller is best but an ordinary rubber roller will work quite well. Now cover the pattern on the block with an even light pressure and avoid rolling over the edge. Pass the roller in several directions to ensure that the block will print well everywhere. Then lay the roller aside taking care to keep its surface away from the table, lift the inked block, and turn it face downwards on to the surface of the fabric. Be certain that it is correctly placed, so that the repeat will be accurate in the next print. Take a mallet—a heavy iron-headed type is best—and hit the back of the block in several places with the handle—not the head—keeping the tool as upright as possible. When satisfied that a good even impression has been made, lift the block and re-ink. Proceed with great care to fit the design together until printing is completed and the piece of material covered with the design. When more elaborate designs with several colours are used, a separate block



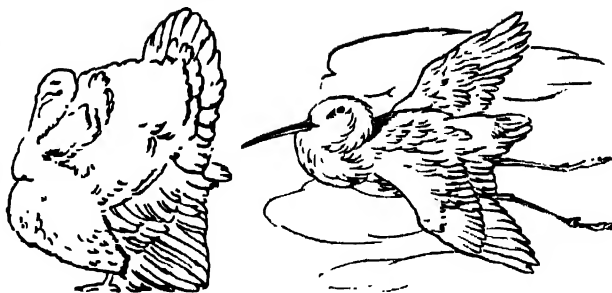
Fig. 99. Sketches from a designer's "motif" book.

must be made for each colour. The complications must be thought out carefully beforehand and a careful analysis of the pattern made before cutting is commenced. See that the block, tools, and slab are well cleaned and wiped dry before putting things away. Turpentine or petrol should be used for the block and roller. Paraffin will suffice for the tools and slab.

Making a Stencil

Stencilling is an even simpler method of using a repeating pattern. Specially prepared paper can be bought, but any stiff paper soaked in linseed oil and hung up for some days to dry will do. The design to be cut is traced on to the prepared paper and then cut out with a sharp knife. A piece of thick glass or zinc is placed under the paper. Care must be taken to design for ties to hold the pattern together. The Japanese, who make great use of stencils, cut two plates at the same time, then place a fine hair network between the two papers and paste or glue them together. This ensures strength and does not interfere with the printing to any great extent. The plates are laid over the material to be printed, and the colour is applied with stiff short-haired brushes of various sizes. Special colours that are fast can be bought in many shades. If more than one colour is to be used, several plates must be cut.

Just as a landscape painter should fill his sketch book with notes of effects seen and incidents noted, so the designer should have a "motif" book. Figs. 99-101 are a series of little jottings that could be used in many various ways. Get into the habit of making such "doodles." Make your choice of motif widespread. Everything must come as fish to the designer's net; flowers, birds, fish, animals, all should be sketched and conventionalised, to



Figs. 100 and 101. Conventionalised sketches based on accurate observation.

form material on which new designs can be based. Nor should landscape be neglected: little notes such as Fig. 99 A might well be the foundation for a design for a tile. A tail-piece or chapter-heading might emerge from the notes B, C, and D. The two motifs E and F could be used, one as an idea for part of a fabric all-over pattern and the other as the element of a border pattern. The conventionalised sketches of a turkey and a stork (Figs. 100, 101) are of the type of drawing note that is often useful for a variety of purposes.

There are many admirable books on ornament that merit close study, especially for the student who must specialise in period decoration, and there are a number of splendid books on plant form of every description which contain thousands of drawings. These are frequently used as reference; but there is no doubt that such studies will be of far greater use if made by students themselves. The ideas that will come from studying the form and decorative possibilities of each flower are far more likely to be fresh and original. Recent years have seen a strong tendency to develop what are called abstract forms in design, but these are at bottom based on natural forms.

LESSON 23

Good Lettering

EVERY student of art would be well advised to study the craft of producing good lettering, for two excellent reasons: first, because lettering has long been associated with all forms of art, and has appreciable influence on the life and culture of the day; second, for the very practical reason that the artist is often called upon to produce lettering or advise on the use of it. Indeed, lettering should be studied by all who, for business or pleasure, are concerned with its use. It may well help in the development of good taste and judgment.

The primary purpose of all lettering is to

record, to give legible information, or to decorate, by means of those designed symbols which form the alphabet. It must be by nature a form of design. To produce good lettering, therefore, it is essential to study and create fine letter forms and to exercise the faculty of arrangement and design.

The graded exercises here given in forming the letters should be followed by the beginner *in conjunction with* Lesson 24, which deals with layout.

First equip yourself with the right tools, the correct use of which is of paramount importance

in the skilful forming of fine letters. The endeavour should always be to develop the character of the letter form, so dependent on the natural use of the tool. The drawing board, T-square, and set-square must be true. A smooth-surfaced cartridge paper or lining paper is most suitable for preliminary practice, but any material with a smoothly prepared surface that will take colour can be used later.

The tools needed can be classified in relation to the three main types of lettering :

1. Sable brushes that will shape to a point, for brush-drawn lettering. The letter-pencil, as it is commonly called, usually has longer hairs than the ordinary water-colour brush.
2. Steel script-nibs fitted with a reservoir ; poster pens ; and chisel-cut brush—for script writing or one-stroke lettering.
3. Fine drawing-nib, ruling-pen, and drawing instruments, for mechanically drawn lettering.

Fig. 102 illustrates the three principal methods of drawing the stem of a letter : A, by " single stroke " square-cut brush or script pen ; B, by " pencil " ; C, by ruling-pen.

The colour materials for general use are Indian ink and poster colour. If water colour is used, tube Chinese white should be added to make the colour opaque. For sign-writing, oil colours are usual, with a medium of turpentine and gold size for easy working and quick drying.

Foundation Letter-forms

The earliest form of picture-writing and hieroglyphics gradually evolved into the beautiful alphabet of Roman capital letters, and from the cursive style of Roman writing developed the small letters, the " lower case " letters of printers' type. These are the foundation letter-forms.

The student should first copy and analyse the basic skeleton proportion and form of each letter of the Roman alphabet with a round-ended pen or with an ordinary nib. While doing this, always make pattern arrangements of the letters and words. Some letters, as shown in Fig. 104, work into an area of a square ;

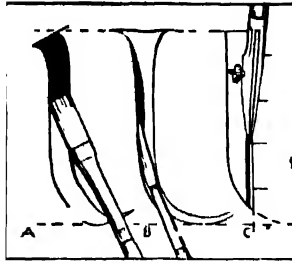


Fig. 102. Comparison of stroke formed by (A) single stroke brush or script pen ; (B) small lettering brush ; (C) ruling pen.

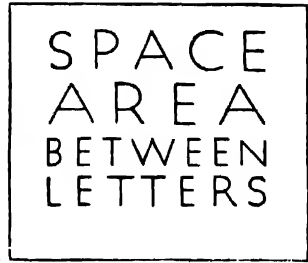


Fig. 103 (right). Example of good spacing of letters. Lettering in pp. 2639-45 by F. J. Mitchell, A.R.C.A.

others are slightly over half a square in width. The first group, including those based on a circle, are A C D G H N O Q U V X Y Z, the narrower letters include B E F I J K L P R S, while the exceptions M and W are usually slightly wider than the square, and T is usually slightly narrower. The contrast in width helps to give character and beauty of proportion.

In word-forming, the space area between any two letters must be balanced by eye and cannot be measured, owing to the varied contours of the letters coming in juxtaposition.

This space area may even be replaced by an overlap on occasion e.g. when L is followed by T. The rule is that the letters should *appear* to be evenly spaced. Experience is the best guide, but it is fairly safe to say that two curving contours, as in OO or OC should be placed nearer together than two vertical contours, e.g. HH, IN. Fig. 103 illustrates the balance of area between letters that must be maintained in letter-spacing and word-spacing.

The next exercise should be in forming capital letters with a steel script-pen, closely following the basic skeleton proportion. Fig. 105 shows a useful model for capitals formed with the script-pen, with a drawing of the pen held in the correct position making strokes of varied thickness. The arrows indicate the direction of the movements made by the pen following the basic skeleton form.

A broad nib should be used. The pen should be held at an angle of about 45°, and this position must be held constantly throughout the natural making of the letter form. Practice in this should soon result in fine letters with a character natural to the tool, and pleasing both to produce and to see. Preliminary practice with the pen will show that the chisel edge of the nib will give thin and thick strokes according to the direction in which the pen is drawn.

The forming of script-pen capitals is recommended because :

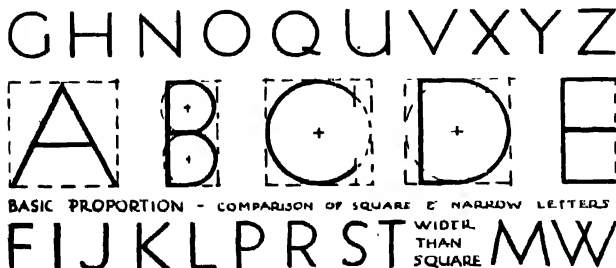
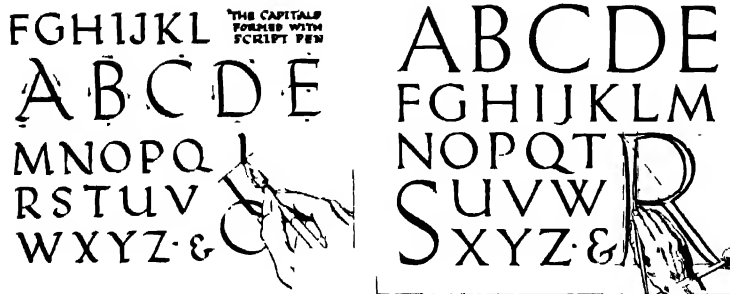


Fig. 104. With the exception of M and W, letters such as those shown here generally work into a square or half square.



Figs. 105 and 106. The capitals in Fig. 105 (left) have been formed with the script pen. Roman capitals in Fig. 106 (right) were freely formed with the brush with little or no preliminary drawing.

1. It is usually found to be easier than the production of the more formal kind, if the right pens are used.
2. It is excellent preparation for the more formal kind, because with the natural use of the slant-cut pen the position of the thick and thin of the formal letter becomes clearly defined and automatically produced. Many people have difficulty in remembering where the thick and thin occur in N, for instance.
3. It also promotes freedom in letter formation and directness in drawing. A good plan before copying letters is to practise down strokes, diagonal curves and serifs (the terminal feet or projections) made in simple patterns.

Formal Roman capitals (see Fig. 106) should now be freely drawn with the brush after a minimum of preliminaries. They can be essayed in several sizes.

It is essential to study really good examples. The importance of good proportion in this type of letter cannot be too strongly stressed, for a great deal of the beauty depends on proportion.

It will be seen that the form of the letters is built up by a series of bold strokes following the outside outline shapes. The Roman letter is characterised by the slight varying of thin and thick sections, the flow of the round forms, and the fine terminating forms called serifs. While the definition between thin and thick stems should be apparent, the contrast should not be over-emphasised—a very common fault. The stems and round forms should be first boldly formed, then serifs should grow with a curve from the stems, with careful avoidance of heavy wedge-shapes. The subtlety of the slight alteration of the curves in the formation of the serifs must be clearly understood and studied, as this gives a pleasing completeness to the well-formed brush letter.

While this letter is the basis of all present-day types, it is perhaps the most difficult kind of letter to form really well, so the student should not be disheartened if his first efforts are not successful. With practice, the ability to produce the letter

will increase and the production of modern letter-forms will come with ease.

In the mechanically drawn letter, built up by means of instruments, the character is mainly dependent on the taste and knowledge of the designer. The influence of the tools in the natural making of the letter-form is not so apparent. A stricter calculation is usually more necessary in this type.

Everyone must be familiar with the simple block or sans-serif (without any serifs) letter, distinguished for its outstanding quality of legibility; evolved and used extensively in modern publicity and display.

The sans-serif letter is recommended as an excellent model for producing a built-up letter by means of mechanical drawing instruments. It can also be produced with the brush with comparative ease after practice. Good preliminary setting-out is essential. T-square, set-square, and compasses should be used.

The proportions of the skeleton capitals should form its basis, and the letter should be of equal thickness throughout. This is defined in the inside of the letter-shape. A useful weight of thickness is approximately one-eleventh of the height. For a bold heavy letter, the width is increased. An example of the sans-serif letter is shown in Fig. 107. In the construction of the letter B, care should be taken to overlap the centre junction of the arcs. The centre of the upper arc of the letter S should be set slightly to the right of the lower, to give balance to the form. Do not get the cross-bar of A too high in the letter.

The outline of the letter should be precisely drawn with ruling-pen and compass, in Indian ink or poster colour, and finally filled in with the brush. While this letter can be used with effect for many purposes, the student is warned that it tends to become monotonous both to produce and to see.



Fig. 107. An example of the sans-serif letter.

LESSON 24

Layout Design in Lettering

WHAT will be the best layout of the letters and words? This question arises in the production of all lettering. Here are some simple stages in layout design and a statement of fundamental principles.

By layout is meant the planning of words and pictorial matter in a form pleasing in design as a finished whole. The mere slavish copying of letter forms or acquisition of technical ability in letter drawing is not enough, unless accompanied by appreciation of design, quality, and feeling in lettering.

The constant practice of creative exercises is therefore essential to give emphasis to the fundamental principles of design, which must include right spacing, good proportion, rhythm, unity, and balance and harmony of colour. The early introduction of these exercises gives a fascinating interest to the production of letter forms as units of a design scheme.

The effect of presentation on the spectator must be considered. It will be easily realized that lettering is still an important means of conveying information and that everyone is directed and influenced a great deal by what he reads. The impression conveyed and left in the mind is therefore an important aspect of design. If the information is worth while, it should look so. It is possible to judge, to a great extent, the value of the information by its presentation, so often is crude and poor lettering design associated with what is worthless or shoddy.

Fitness for purpose in the selection of type of lettering and arrangement must take a primary place in designing for specific purposes. Obviously a layout that would be especially suitable for a painted hanging sign would be useless on a letter-heading. Re-arrangement is necessary. Such practical considerations must arise in all layout.

Simple Principles

The beginner should give attention to the following simple principles as a guide to preliminary setting-out.

1. Is the space which is to contain the lettering suitable in shape for the purpose and ultimate setting of the lettering? A well-proportioned simple space would obviously be fittest for a dignified notice in a good architectural background.
2. Will the lettering fulfil practical requirements and be suitable for the materials employed in its production? That is to say, is it to be painted, carved in wood or metal, or drawn for some method of reproduction?
3. Will the wording be read from a distance or from near at hand? If the first, it requires boldness and immediate legibility; if the second, fine craftsmanship can be used.

4. Is the character of the type of letter suitable? A heavy block letter would be quite out of place on an illuminated address, but might look quite well on a poster. A script letter would be unsuitable for a precise mechanical drawing.

The consideration of area and of pleasing proportion will be found useful, especially in making a decision on the actual dimensions of the space to contain text. The rectangular shape is the most practical form and the units of space that satisfy the eye are those with a proportion of 5 to 7, 3 to 4, or 8 to 11. Both circular and oval forms can look well but are limited for general use.

Paper and board sizes are usually royal (20 × 12½), imperial (30 × 22), or crown (15 × 10). These can be cut and subdivided by halving and quartering, giving shapes of excellent proportion.

The spacing of lettering must be affected by the text and the number of words to be included. A good plan is first to select important words and passages to be stressed. This will be found to be a controlling factor in the design.

Next decide on the approximate size of wording in relation to the space available, including space between lines and the area of surrounding margins. Care should be taken to avoid monotony by varying the height of the words and the spaces between the lines.

Surrounding margin space round the text of a good book gives an excellent idea of the value of marginal space. Top and side margins might be the same, but the base should be larger, so that the lettering as a whole appears suspended. A good plan is to begin with a few words similar to the examples in Figs. 108 and 109, which compare good and bad layout on a showcard.

Marginal Space

Fig. 108 is a copy of a typical showcard of a kind commonly seen before the First World War, when letters of an amusing but somewhat vulgar style (or assortment of styles) were quite skillfully drawn in very poor arrangements, with stock decorations serving to fill awkward remaining spaces.

In Fig. 109 the same wording has been re-designed. Here will be seen the value of white space area as part of the design. The lettering, although slightly smaller than that in Fig. 108, is clearer and more pleasing to read because the form is simpler, while the more ample margin isolates the wording from any surrounding objects and wording which might confuse.

First try out a preliminary rough of the text, either actual size or at a proportionately smaller



KAY'S QUALITY SHOES

Figs. 108 and 109. Example of badly designed showcard is given in Fig. 108 (left). In Fig. 109 the same wording has been redesigned.

scale, in pencil, pen, or colour, so that a planning of the scheme can be seen as a whole. This is the method followed by professional artists and is a recognized studio practice for all commercial art.

The "setting-out" in the finished design (see Fig. 110, where a pencilled layout for a programme cover is shown in progress) should be done in pencil with the help of set-square and T-square, as soon as the calculation of the height of a letter is finally settled. If the lettering is to be symmetrically balanced, a vertical line should be drawn down the centre of the panel with verticals on either side to terminate the length of lines and the width of marginal space surrounding the body of text.

The wording should now be lightly indicated in pencil together with any relevant pictorial matter, decoration, borders, etc. Make final adjustments next, to check with the rough layout for unity of design, and allow for good letter-spacing and word-spacing. Execute the lettering first, and add the decoration, borders, etc., later.

When using a script-pen, etc., the method of working should be direct and bold. Practise with the pen to see that it works successfully and that the flow of ink or colour is adequate.

In filling the pen, it should not be dipped into ink, the reservoir should be filled from a brushful of ink.

Start with the larger letters if it is intended to vary the size of passages of wording. Take care to adjust the weight to the size of letter by using a suitable width of nib, pen, or brush; this will retain consistency of character throughout the writing.

Colour should dry flat and even; if too transparent, it will accumulate at the termination of pen-strokes and appear as dark blobs.

Because the script letter can be speedily formed, it is useful for quickly written notices and posters. It can be used with

advantage where the freely formed letter would be decorative and applicable, as illustrated in Fig. 111, where script is usefully adopted for an exhibition notice.

Brush-formed Roman capitals (see Fig. 109) should be set out with care, with special attention to letter-spacing and word-spacing. Much of the classical dignity of these letters depends on spacing. Always leave ample space between the letters, even if the size of the letters has to be reduced throughout the line. A mahlstick (as shown in Fig. 106) or hand-rest will assist to steady the hand when manipulating the brush. Always use opaque colour. Construct the main letter-forms with bold drawing, completing the line of letters; then add serifs of suitable weight.

Attempt simple formal layouts to begin with, and a limited number of words, relying on the quality of the letter-forms and the arrangement for decorative effect. Keep any decoration severe and formal. The colour schemes should be harmonious and used with restraint; vivid contrasts in colour are not in keeping with this style of letter.

Although the formal character of Roman capitals suggests that they are particularly appropriate to dignified and important notices, etc., it will be found with slight modification to be very adaptable to light and fanciful brush interpretation.

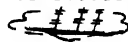
Roman capitals can be used with advantage for all signs, inscriptions, and public notices of a permanent nature, for showcards, posters and business printing connected with good merchandise, for book-jackets, title-pages, and for any purpose where refinement of design must predominate.

Sans-serif letters are set out with instruments precisely and accurately, adjusting the lightly



AN EXHIBITION OF OLD ENGLISH SAILING SHIPS

MODELS PRINTS
DRAWINGS AND
CHARTS



CONTRASTING STYLES. Figs. 110 (left) and 111. Pencilled layout for a theatre programme cover, Fig. 110. An exhibition notice, Fig. 111.

drawn preliminary arrangement. T-square and set-square should be used throughout, defining the verticals and horizontals and checking the thickness of the letter throughout the line of letters. This is especially necessary in drawing lettering for reproduction.

If the compass is used for circular and curved forms, hold it tightly, taking care not to puncture the surface of the board or paper with the compass-needle. The outline of the letter should be clean and sharply drawn with the pen,

brush, or ruling-pen before being filled in with ink or poster colour. Areas of a layout can be painted in flat colour with the lettering applied in contrasting light or dark colour. Simple geometrical shapes will be found to be most suitable to use in conjunction with this type of letter.

The clear, bold nature of the letter makes its use advantageous for directional notices (as shown in Fig. 107) and in many types of display and commercial advertising.

LESSON 25

Creative Lettering

WITH the understanding of the qualities of basic letter form and layout designs, together with whatever skill has been acquired through actual practice, you can now explore the wider field of design in lettering with the adaptation and creation of new letter-forms. This Lesson also includes suggested exercises to link lettering with other subjects in which you may be actively interested—geography or history, for instance, for which interesting decorative maps and charts could be devised.

The scope for imaginative work in lettering design is manifest in many of the excellent commercial productions of reputable firms, but the student is warned that the designing of new types of lettering holds many pitfalls for the unwary, such as the mixing of "families." If knowledge is insufficient, enthusiasm in devising something entirely new may result in curiosities where the wording is practically unreadable because every letter looks alike. The mistakes are usually self-evident, and with experience can be avoided.

Small and Italic Letters

You should certainly experiment in designing new letters by slight modification and adaptation of good existing types. This encourages ingenuity and creative design as applied to lettering, and obviates monotonous and dull work. Legibility of letter-forms and layout is essential in directional signs; but its necessity in other fields can be overstressed, with results that bore the reader. Letter-forms should leave an interesting impression and should convey the message by stimulating the reader's intellect.

Lettering can be designed to convey a definite impression suitable to the words employed; it can suggest urgency can be light and charming, and can also be severely mechanical.

So far only capital letters have been mentioned. This is the place to consider "small" letters—lower-case letters, as the printer calls them—and italic letters: first for general use, then as a basis for free and original design and arrangement.

Small letters were derived from the script letters made with the pen. It is advisable to study the form of a good modernised version of an early medieval script, as shown in the example Fig. 112. The pen should be held in the same manner as in forming the capitals.

The chief advantage is that a larger number of words to the line can be arranged, but it is usually more easy and flowing to read when a considerable amount of text is required. The stems that project above and below the body of the letter are known as *ascenders* and *descenders*, and allowance has to be made for them in spacing your lines in the setting-out. The ascender should terminate at the height of the capital, while the body should be approximately half the height.

The letters should be written reasonably close to each other in each word, and tend to connect, or actually connect, with their fellows to assist the flow of words and writing in each line. With practice, considerable individuality and beauty of style can be developed in script writing and it is effective for handwritten passages of text, for short notices, and for showcard work.

Brush-formed small letters (Fig. 113), while having a basic symbol-shape similar to the

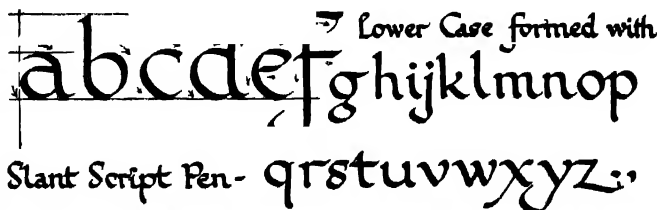


Fig. 112. Example of a modernised version of early medieval script.

script letters, should be first drawn in close relation to the style of the Roman capitals. The method of bold brush-drawing should be continued in the round forms, with the considered relative proportions of the thick and thin stems and a similar construction of serifs. To be in harmony with the beauty of the capitals, designed spacing is essential. Four lines should be drawn for each line of letters, the middle two to contain the body of the letter. The branching of the round forms should grow easily from the uprights. This simple, clear, and legible character is of special value to the commercial art designer, as it is easily adaptable when used with printers' type.

Sans-serif small letters follow the mechanical construction of the capitals, but are somewhat limited in appeal, especially when used in large quantities. The similarity in weight tends towards heaviness and consequent lack of ease in reading. For this reason it is seldom used in the form of, say, printers' type for the text of books. This letter can be a useful model for transcription with the ball-pointed pen.

The attractive italic letters, whether in script or brush-formed (models of which are illustrated in Fig. 114), are distinctive because of their relatively free and informal character. This is an enjoyable type of lettering to produce, and is most useful for promoting freely drawn lettering design. Practice in forming the letters with pen should precede the use of the brush.

The following features are apparent in italic letters: (1) they are slightly narrower in body, with elongated ascending and descending strokes; (2) the setting of all letters at a constant

Brush Formed

abcdefghijklmnopqrstuvwxyz

Lower Case

Fig. 113. Simple, legible characters are of special value to the commercial art designer.

slight slope towards the right assists easy and rapid production; (3) the lightness of weight of the letter makes for elegance.

In setting-out, larger space should be allowed between the lines of words, and in the small letters depth should be allowed for the extended stems. A slight general compression allows a greater number of letters and words to be arranged to the line. Italic can be arranged successfully and in harmony with Roman capitals.

For script italics a narrower slant-cut pen will assist the production of the lighter character. The slope of the letter should be only slight, otherwise balance will be lost. The arrangement of the strokes in making the body and the serifs is the same as in making script, except that more freely flourished terminals can be introduced into the capitals and into the descenders of the small letters.

Brush-formed italic capitals should first be formed on the modified Roman character (see Fig. 114), with slight slope and compression. The small letters should tend to link in each word. The lettering should be drawn in lightly with pencil, then freely formed with long brush-strokes. It can be used simply for the effect of free elegance or emphasis, and is often employed for prefaces, poems, or quotations. Upon this excellent letter-form a free flourish can be developed in the designing of distinctive, modern styles. The quality of the "swash" or flourished letters depends on the skill and discretion of the designer. The only limitations are those of good taste.

Some attention might be given here to the numerals, which should always be designed in character with the letters with which they are to be used. The lower parts of the 3, 5, 7 and 9 are sometimes drawn lower than the base line, and the 2, 4, 6 and 8 produced equally above the body. Balance of figure must always be maintained.

In the designing of new forms of letters, build up on good existing models. Inspiration can be gleaned from the good type-faces and examples of fine lettering seen in much contemporary advertising.

Italic: Script Pen

abcdefghijklmnopqrstuvwxyz

Flow of Italic

and Brush Formed

abcdefghijklmnopqrstuvwxyz

Fig. 114. Brush-formed italic capitals based on the modified Roman character.

Letters can be designed together to convey a definite impression, such as strength and boldness, lightness and elegance, the clean and precise, the intriguing modern decorative, or the quaint period piece. This is a form of symbolism which the designer will be able to utilise to great effect in conjunction with the style of layout. His inspiration can be found in all forms of decoration and from many other sources. By line, colour, shape, and intelligent designing, he can produce original arrangements and evolve interesting, readable letter-forms. All the letters of a word or passage must be consistent in character and weight, and build up into a unified whole.

The possibilities in layout design are limitless. Although balance should be maintained, the arrangements need not be regular or confined to a set pattern. For instance, movement can be suggested by the flowing pattern of all units, while geometrical composition gives infinite variety to the use of even standard type faces.

The examples given in Fig. 115 are intended to suggest simple types of letter and layout design that the student may find useful to emulate. His own inspiration and interest will no doubt lead on to new adventures in lettering design. While the more obvious utilitarian uses of lettering are apparent, the purely decorative possibilities should not be neglected. Many opportunities occur of enlivening and enriching lettering, or making it into a design motif.

The following suggestions give a few ideas and possible uses. As a design motif, the monogram (see two examples, Fig. 115) can be effectively used for such crafts as stencils or lino-cuts, fabric printing, embroidery; for all-over designs such as endpapers and possibly for decoration or pottery.



Fig. 115. Experimental styles serve as models for work along similar lines.

Script of various styles can be effective for invitations to plays or for menus, and for broad-sides of ballads, nursery rhymes, or poems, and looks well when used in combination with heraldry, historical charts, and decorative maps. The quill or script-pen is excellent for producing decorative borders and line finishings, and for free flourished decorations.

Formal types of lettering are best limited to book plates, house names, book and music covers, name blocks, and those purposes where distinction is necessary.

Original forms of lettering have the largest scope in commercial publicity, linking up with varied types of illustration, and with designs for address labels, packing labels, decorative wrapping papers, cut-out letters and showcards, and all general display.

LESSON 26

Modelling in Clay

MODELLING is the art of building up to the completed state—the exact opposite to carving, in which the result is obtained by cutting away.

Clay is the most suitable material because of its plastic quality and the ease with which it can be handled when in a soft state. It can be used in various degrees of hardness for different purposes. When mixed to the consistency of cream, it is called *slip* and is used for pouring into moulds for the making of certain kinds of pottery; it can also be applied with a brush in

one method of low-relief modelling. At the other end of the scale, it can be used in such a hard state that steel tools have to be used to scrape or carve it.

For general use in modelling, clay should be in a soft and pliable state—neither sticky nor too hard, so that each piece will leave the fingers cleanly and adhere to the clay already in position. If the clay is too soft, it should be rolled on a clean board so that the excess moisture is absorbed by the dry wood, then it should be “wedged” by knocking the pieces together on

the board and squeezing with the fingers until the consistency of the clay becomes uniform. On the other hand, if the clay is too tough to be worked freely with the fingers, more water should be sprinkled on, a little at a time, then worked in with the fingers as before. Clay can usually be obtained in quantities of one cwt. or more from the various pottery companies, who deliver it in a moist state ready for use. A light grey tone is the most suitable for general purposes, as the forms are more readily seen.

Clay can also be obtained in powder form in small quantities from dealers in artists' materials. It is mixed by adding water gradually until a thick paste results, and this should be well mixed or "worked" by stirring with a stick or large spoon until all the powder is thoroughly dissolved. The paste should then be spread out to the thickness of about one inch on a clean surface; dry plaster slabs are the best, as the dryness of the plaster rapidly absorbs the excess moisture; but wooden board will serve quite well. To complete the process, roll out on dry boards to get rid of stickiness and "wedge" as previously described.

Clay that is supplied ready for use will often be improved, made less "greasy" and easier to work, by the addition of a little silver sand.

Prepared clay should be kept in a moist, workable condition. A wooden bin or box with a zinc lining and air-tight lid is most suitable for large quantities; for smaller amounts a zinc dustbin, size as required, answers the purpose admirably. Do not use a receptacle of any metal that will rust.

Tools for High Relief Modelling

For the first subject to be dealt with, modelling in high relief, the apparatus and tools required are comparatively simple. A strongly made easel is needed, capable of taking a weight of, say, 10" lb., and rigid enough to stand the pressure when working the clay.

The wooden modelling board, about 2 ft. 10 in. × 1 ft. 6 in., should be made of 1 in. timber, and to avoid the warping action of wet clay and water, it should have the boards clamped together by two battens nailed on crossways at the back. Two wooden tools, one wire tool, a pair of callipers (Fig. 116), and a small sponge are all that will be required for simple bold modelling; most of the work is done with the fingers.

The object of the first exercise should be to acquire a knowledge of the material used and at the same time to train the eye to see and realise form and projections.

Copying a strong simple piece of ornament is one of the best ways of acquiring this knowledge.

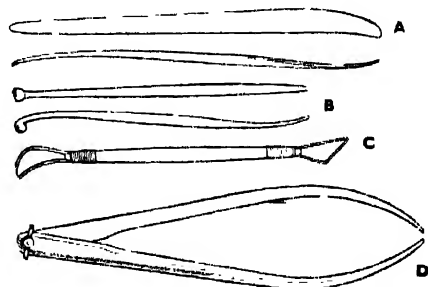
Casts made from details of Gothic carvings with high projections (Fig. 117) are most

suitable for this purpose, as they are bold definite pieces of ornament, in which the effect depends on the bulk of the form and not on small detail.

Tie the modelling board firmly on the easel with strong cord. This will help to keep the work rigid and also prevent it from being accidentally knocked off the easel. Now drive a nail into the left half of the board where you will hang the cast. Next, in the right half of the board drive in several 1½-in. nails, leaving about 1 in. projecting; these should be well within the contours of the work—zinc nails are best, as they do not rust. Damp the board around the nails. The clay should then be forced on to the wet board until the nails are well covered; this insures that the clay will not slide off the board during work.

Proceed to build up the underlying shapes by means of small rolls of clay, rolling the clay between the hands to form cylindrical shapes; they are much easier to work with than any odd-shaped piece broken off from the lump of clay. Press each piece firmly on to the clay already in position until the underlying shape has been arrived at. In a piece of ornament it will usually be found that certain main forms and shapes are obvious. Study these from all angles, and use callipers to check the main dimensions, i.e. the length, breadth, and projection from the board. Keep these forms slightly smaller than the cast and ignore detail at this stage.

It must be clearly realised that this is a problem dealing in a very definite and concrete way with the three dimensions of length, breadth, and depth; therefore it is of primary importance that the student should study the cast from all points of view, the front, the side, and underneath—all are equally important. *Never lose sight of this fundamental idea for one moment.* It cannot be too strongly emphasised and must be thoroughly understood at the start; otherwise the resulting work will be flat, uncertain, and characterless. The tendency of every



MODELLING TOOLS. Fig. 116. A, two views of wooden tool with tapered ends. B, two views of wooden tool with knob at one end. C, wire tool for removing redundant clay. D, pair of callipers.

beginner is to be scared of deep forms, and to keep everything too flat.

When satisfied by close study that the work is correct in general form and measurement, continue by adding the smaller detail, bit by bit. Do this by rolling small pieces of clay between the thumb and fingers into cylindrical shapes; press these on to the underlying clay with thumb or finger, trying to follow carefully the shape of the detail in the cast. In short, draw with the clay and make each piece into a definite form. Use the fingers as much as possible, and avoid putting on too much clay, for it will only have to be laboriously scraped off again.

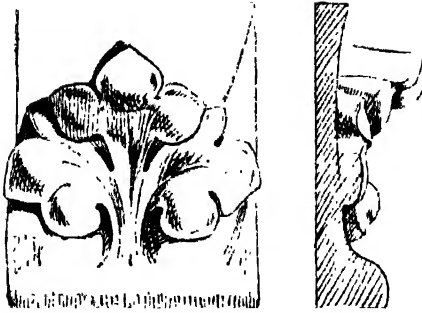
Practice will be needed to estimate the amount of clay required to form each piece of detail, and also in the matter of applying the clay cleanly and directly. The time spent at this stage in acquiring a mastery of the material will be well repaid later when more ambitious work is attempted.

Use of Modelling Tools

The wooden tools (Fig. 116) may be used in modelling detail if the forms are too small to be easily worked with the fingers—the tapering ends being shaped like small fingers and used in much the same way. The knob end is useful for working in deep hollows.

The cutting end is either for the preliminary drawing of shapes on the clay or for cutting clean edges, while the wire tool is chiefly useful for removing portions of the clay when too much has been applied. Practice in working the clay will supply the answer to most of the questions arising as to their use, the golden rule being to use the fingers as much as possible. A damp sponge will be found very useful for keeping the fingers moist.

Having worked from casts and acquired a certain proficiency in handling clay, attempt to model natural forms. Foliage of a bold type—a spray of laurel—is excellent. This has a



MODELLING IN HIGH RELIEF.
Fig. 117. Front and side views of ornament modelled vertically against a wooden board.

very simple leaf form, and will allow the student to concentrate on the arrangement of leaves and stem, etc., also to express the growth without being troubled unduly by complicated detail in the leaves themselves. Later, such foliage as the oak, the berried ivy, and the vine are excellent subjects for the modeller, who will be able to appreciate the use of these elements in the ornament of many historical periods.

Pick a spray of laurel of suitable size with an interesting arrangement of leaf and stem form, preferably one in which the leaves are to some extent super-imposed—lying one over the other—as this will help in building up the clay, one leaf supporting another. Fasten the spray on to the left half of the modelling board, then prepare the right half of the board.

Now lay a clay ground of about 1 in. in thickness, scrape over this ground with a wooden ruler or flat piece of wood from different directions until quite flat and smooth. This ground should, of course, be of suitable size and shape to allow for the building up of the foliage.

Now will be seen the essential difference between this exercise and the preceding work. Until now the forms dealt with have been casts from pieces of ornamental sculpture—that is, ornament derived from natural forms—treated by the sculptor so as to be suitable for the material in which they were carved—or modelled. All projections must be solid and well supported without thin flimsy edges that would easily be broken. It will be seen at once that it is quite impossible to model the foliage in clay exactly as in nature, with thin leaves supported only by the stem. Therefore the first problem will be to see that the leaves, stem, etc., are treated in this solid manner, clay being added to the undersides of the leaves in such a way that they receive close support from the other leaves or from the clay ground.

LESSON 27

Modelling and Casting Busts in the Round

UNTIL now the work attempted has been either in high relief or natural forms placed against a background. The next stage to be considered will be the modelling of form completely in the round. A cast from a life-size head or bust of good type (such as Greek or Roman portrait sculpture, or the work of the

16th-century Italians or 17th-century French sculptors) is suitable for preliminary work, followed by modelling from the life. In each case the methods are similar. A suitable type for the student is one in which the bone form is well defined—an old man's head with strongly marked features and without beard or moustache is ideal.

A modelling stand about 3 ft. 6 in. high with a revolving top will be required; this is best obtained from a dealer in artists' materials. A bust stand can be made by the student; it consists of a wooden board about 1 ft. 6 in. square made of two thicknesses of 1-inch wood nailed together, also an upright piece of wood about 12 in. high by 2 in. square. These are fixed together by cutting a hole through the board very slightly less than the 2 in. square of the upright, and then driving the aforesaid piece into position with a mallet. Now take two pieces of lead or compo piping about $\frac{1}{2}$ in. in thickness and each about 2 feet 6 in. long. Bend both of these gradually into loops and nail on to the upright, crossing them at the top, where they should be fastened with a piece of wire (Fig. 118).

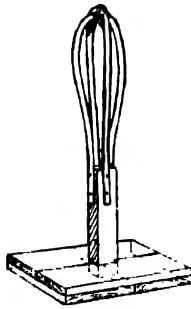


Fig. 118. Support made of wood and piping for modelling a bust.

This is termed the *armature*. The wooden upright gives a rigid foundation and the piping allows a considerable amount of movement, should it be necessary to turn or bend the head. Now cover in the upright and the piping to the depth of about $1\frac{1}{2}$ in. all round, making sure that the clay is well forced into the space between the two crossed pieces of piping.

Copying a Bust

Consider first a cast from an antique bust. Place this cast on to a second modelling stand; the clay model and the cast will be at the same height, the centre of the heads being eye level.

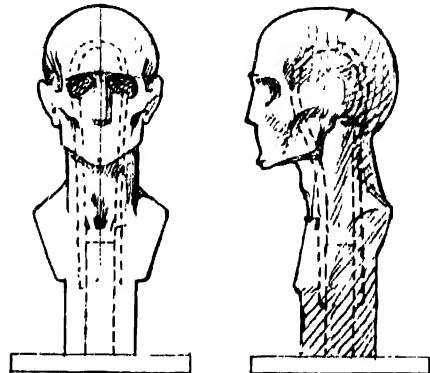
First decide on the position of the pit of the neck. This should be just above the top of the wooden upright, so that the maximum amount of play is allowed for turning the head if desired (Fig. 119). From the profile now find the under line of the jaw and proceed to build out to get the projection of the chin. This is the first point to be taken on the head, and should be fixed by measurement with the callipers from the pit of the neck, and by estimating the projection from the same point.

Continue upwards, following the general projection of the skull from the chin to the brow, then over the top of the head and so down to the base of the skull. Do this by building on rolls of clay pressed on firmly with the fingers, keeping slightly under the actual dimensions of the cast and ignoring, for the moment, the projection of the nose.

Turn now to the front of the head and add sufficient clay to form an oval shape. This will be the foundation. Next, mark a line in the clay from the point of chin through the centre

of face and head, continuing right over top of skull (Fig. 120). Take the callipers and measure on the cast the distance from the point of chin to the arc of the brows. Mark this on the clay, first putting the end of a match or small wooden pin into the clay at the point of chin, so that the callipers do not sink into the clay. Then another pin is necessary to form a mark at the intersections of the arc with the centre line of the face. The next measurement to be taken is from the point of chin to the crown of the head. This is the longest dimension of the head.

The following measurements will give the width of the head: from the point of chin to the inner corner of the orifice of the ear (take this of course on both sides of the head), then from the point already taken at the centre of the arc of the brows to the corner of the ear as before; continue by measuring across the face to these same points of the ear. Where these three measurements intersect place another "pin." This should be very carefully done so



HOW TO MODEL A BUST.
Fig. 119. Showing how the clay has been applied to the lead piping and the principal features indicated.

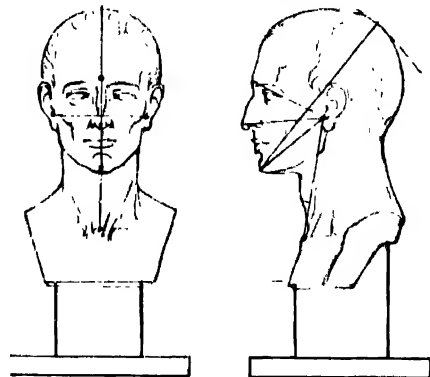


Fig. 120. Direction of the measurements which must be made when copying a head from an existing cast.

By Harold B. Youngman, F.R.B.S.

that the measurements can be relied upon, and should also be checked by measuring from the "pins" at the corner of ear to the pit of the neck. From the corners of the ear now measure forward to the tip of the nose, putting in a "pin" and building up enough clay to support it.

It is best to use few points; those indicated should be sufficient. They must, however, be very carefully checked to ensure accuracy; inaccurate measurements are far worse than no measurements at all.

Bones of the Head

The bone formation of the head should now be studied. First hollow out the sockets of the eyes—their position can be estimated from the measurement taken of the arc of the brows. Then find the lower line of the jaw and the angle where it turns upwards towards the ear. Continue by indicating the position of the cheek-bones; their width as seen from the front, and their forward projection from the profile. Also from the profile look for the shape and projection of the frontal bone which gives shape to the forehead, and the nasal bone. These bone forms should be studied from all angles; the sections as seen from below particularly merit great attention.

When satisfied that this underlying bone construction is correct in form and measurement, continue by first drawing the profile, getting the projection of the lips, and of the balls of the eyes in their sockets. Then from the front get the width of the eyes, bridge of the nose, nostrils, and mouth, together with an indication of the eyelids.

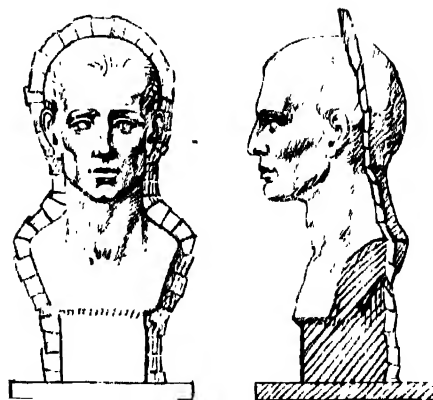
This is a general description of the method used in arriving at the main facts in the construction of the head. Continue by building up the thickness of the neck from all points of view, taking care that the head appears to grow out of the neck and does not seem to be just stuck on.

It is important that the work should be turned frequently, and that the clay model and the cast should be in exactly similar positions when being compared.

As the work progresses, a change of light is very helpful, but whether the light is from the top or from right or left, always place the two heads so that the form is strongly defined by the position of the masses of light and shade. A light thrown directly into the face tends to make all the form appear flat.

Modelling the Flesh

The more fleshy parts of the head should now be considered, and each part should be studied carefully from different points of view, as the clay is applied. Study the direction of the form, such as where it turns into the corners of the mouth, around the wings of the nostrils, and



CASTING BY WASTE MOULDING.
Figs. 121 and 122. The plaster mould is made in two pieces, the dividing wall being of thin brass foil arranged in the position shown here.

the corners of the eyes. These are a few of the more obvious forms. Again study the difference between the flat planes of the bone form, notably the upper edges of the cheek bones below the eyes, and the sharpness of the angle of the jaw. These should be contrasted with the softer, rounder forms of the cheeks, the fullness of the lips, etc. Study also the sections of the eyes, noting how the lids take their form from the roundness of the eyeballs.

Gradually complete the smaller and more subtle detail of the head, taking care that character is retained throughout and that the strength of the main essential form is never lost in the effort to model the detail.

"Waste Moulding"

In casting a bust by means of "waste moulding," the mould is used to make one cast only, and is then destroyed by being chipped away.

It is usual to make the mould in two pieces to allow for removing the clay and armature. The joint should be arranged to come from the top of the head down the sides about 1 inch behind the ears, continuing down the neck on to the base (Fig. 121). The dividing wall in this case is made of thin brass foil, about 1/200 of an inch. The benefit of this is that the complete mould can be put on in one, instead of having to be done in two separate pieces, which is the case when a clay wall is used. This method of using clay walls is described later as "piece moulding" (Lesson 28).

Cut the brass foil into strips of about 1 1/2 inches in width, and make them into short lengths of from 1 to 2 inches. Press these into the clay so that they hold firmly (about 1/16 of an inch will be deep enough). They should be as nearly as

possible at right angles to the surface of the clay and should slightly overlap each other. Do not put them in a straight line, but make the face of the wall somewhat irregular. This will form a key later on when the two portions of the mould are put together for the cast to be taken (Fig. 122).

The first coat of plaster to be used should be coloured slightly by mixing red or yellow ochre with the water. The plaster of Paris called fine Italian plaster should be used. Pour the coloured water into a basin ; about 4 or 5 pints will be required for a life-size bust as shown in diagram. Sift the plaster through the fingers until a small mound appears in the centre above the water, allow this to settle, then stir the mixture and beat with a spoon ; a large metal cooking-spoon is suitable. Stirring alone is not sufficient ; the plaster must be beaten as one beats an egg to drive the sediment at the bottom into the water at the top. Try to avoid frothing, but if froth appears, remove it, together with any scum, by dragging a piece of paper across.

Covering the Model

Flick, or throw, the plaster on to the clay model with the fingers, driving it well into the deeper parts of the modelling. Start with the eyes and keep turning the model to ensure that all parts are equally covered. As the plaster "goes off" (thickens), it should be built up to a thickness of about $\frac{1}{2}$ inch. Leave the surface of this coat rough ; if it is too smooth, add little blobs of plaster to give a key, and make the thickness rather greater on either side of the metal walls.

Now brush over with clay wash, i.e. clay and water mixed to the consistency of thin cream ; this is to prevent the coloured coat from sticking too tightly to the supporting coat. Next mix a somewhat larger amount of plaster without colour and apply as before. At least two mixings of this will be required to give a thickness of about 1 inch. Care must be taken to get a uniform thickness and to avoid weak places which might cause the mould to break.

To strengthen it further, lengths of iron about $\frac{3}{4}$ inch thick may be fastened to the back of the mould by means of pieces of tow dipped in plaster. The joint must now be scraped down until the edges of the brass foil are all uncovered and free from overlapping plaster.

Then proceed to remove the back piece of the mould, using thin wooden wedges tapped in against the sides of the brass foil, and water poured along the joint. Now comes the removal of the clay from the front portion of the mould. Scoop this out, working round the armature, pulling back or cutting out the pieces of compo piping, until it is possible to leave the front piece clear of the armature and board.

The remainder of the clay in the front portion

is now removed, care being taken not to injure the surface of the mould by cutting too deeply. When both front and back portions are cleared and the brass foil is removed from edges, wash thoroughly with a sponge and plenty of water ; do not rub the surface, but dab with the sponge.

Soaping the Mould

The moulds must now be soaped. Prepare the soap as follows. To 1 pint of boiling water add two tablespoonfuls of the best soft soap, boil gently, and stir well until all the soap is dissolved.

Pour half a cupful of this mixture into each half of the mould, working it into all parts with a large soft brush. Repeat once or twice, continuing for about 10 minutes ; then remove all soap remaining on the surface, using a brush or sponge, which should be washed frequently. Allow the surface to dry and then apply a very little olive oil, just sufficient to moisten the tips of the hairs of a dry brush. A slight sheen on the surface will result, and the mould is ready to be tied up for filling.

Be sure that the two portions key together accurately, then tie with rope and put strips of tow dipped in plaster across the joints to assist in keeping the portions in position and to prevent the plaster from running through the joints when filling.

Pouring in the Plaster

Soak the outside of the mould in water, then place on a low bench or box about 2 feet in height. Prepare enough white plaster to form a coating of about $\frac{1}{2}$ inch in thickness. Place the mould head downwards, pour the plaster slowly in, and turn the mould round and round in different directions, gradually bringing it down to the horizontal. This will ensure that the plaster runs all over the surface of the mould and fills all the hollows. Continue lowering the mould until the remainder of the plaster has run over the base and back into the basin. Pour the remainder back into the mould and repeat the movement until the plaster is too stiff to run. Immediately mix more plaster and repeat until the average thickness of the filling is about $\frac{3}{4}$ of an inch. This can be strengthened further by laying in tow dipped in plaster to help connect the neck and throat with the back of head and chin.

Chipping Out the Mould

Now the final process of chipping out. Leave for half an hour ; then, with a mallet and a very blunt chisel, begin to chip away the white outer layer of the mould, first of all removing the irons. Work gradually down from the top of the head, holding the chisel at right angles to the surface, and breaking away the white plaster until the coloured coat is visible. The use of the clay wash will now be seen, as the white coat

will come away cleanly, leaving the $\frac{1}{4}$ inch of the coloured coat to be cut away separately.

Continue cutting away the white coat down to the level of the chin; the remainder of the white should be left for a time to give strength to the neck, whilst the coloured coat is chipped from the head. Great care must be exercised to prevent the chisel from going through into the surface of the cast, but if the soaping and oiling have been well done, the coloured coat

will come away without damage to the cast. To fill any slight cuts or breaks that may occur, "kill" a little plaster by putting it in a spoon and holding it under water for two or three minutes before mixing; this will retard the setting. Plaster varies in strength, and is usually mixed by judgment of the amount required, so that when beaten it is of the consistency of thin cream. A rough estimate of quantities is $2\frac{1}{2}$ lb. of plaster to 1 quart of water.

LESSON 28

Modelling in Terracotta: Piece Moulds

THE making of simple figures, groups, and animal forms will give wide scope to the powers of imagination and observation, also to the technical ability of the student. Various methods of work, and the use of different materials, will give added interest to these subjects.

First, modelling for terracotta, i.e. baked clay. This can be in many different colours ranging from the usual light grey to black. The more common clays are red, buff, or grey, and are easily obtainable from potteries. Unless the clay used is a prepared "body," it will be advisable to add about $\frac{1}{6}$ part of silver sand to the clay before working. Do this by cutting the block of soft clay into slices with a piece of thin wire, sprinkling the sand on to each slice and then wedging. See that no small particles of plaster have got into the clay, otherwise they may blow out during firing, or even work out after the model has been taken from the kiln.

These simple compositions can usually be built up without an armature; should one be needed, it must be extremely simple and easy to remove on completion of the work.

In building up the clay, carefully "pack" it, pressing each piece firmly on, so that there are no air pockets; these cause the model to crack or break during drying or firing.

It is best to get the general shape of the composition built up, then allow it to stand long enough to toughen and become more rigid before continuing.

Before firing, the clay model will have to be hollowed out to a fairly even thickness, to prevent it from cracking or twisting. A subject should be chosen that will allow the composition to have a wide base. This will help to keep the work steady while in progress, and will thus greatly facilitate the hollowing-out on completion.

Most breakages during firing are due to air pockets in the model, caused by careless application of the clay. This fact should be borne in mind while working.

When the model is complete, it should be

allowed to toughen sufficiently to stand handling. Then proceed to hollow out by gradually cutting away the clay from the inside until a general thickness of from $\frac{1}{4}$ inch to $\frac{3}{4}$ inch has been reached. This is for small work up to about 18 inches high; larger work will require slightly more thickness. The model should now be dried gradually before being sent to the kiln, where it should have a soft firing.

If it is required to duplicate a clay model, a "piece mould" in plaster can be made. This must be arranged so that each piece can be removed from the model without damaging the form in any way, and also without having to destroy the mould as is done in "waste moulding." Piece moulds can be made for plaster casts to be taken from them, or for clay impressions, pressed or poured.

The essential difference is that with a clay impression, the moisture in the clay is absorbed by the dry plaster mould, causing shrinkage which allows the clay impression to come easily away from the mould. A plaster cast, on the other hand, does not shrink, and therefore requires more pieces to ensure that the cast is not damaged when removing the mould.

When designing a model for piece moulding, avoid undercutting the form and eliminate unnecessary detail. Much time will be saved and the work will gain in character. In Fig. 123 the mould is so arranged that the whole of the front mould of the figure is in one piece.

The edges of each piece are on the upper surfaces of folds of draping whenever possible. Careful study of the model is very necessary when arranging where the joints of the mould are to be placed. Draw a fine line to indicate the joints and see that each of the pieces will come clean away from the model without dragging off pieces or otherwise injuring the form.

Now prepare a flat sheet of clay, rather less than $\frac{1}{2}$ in. in thickness, and divide this into strips of about $1\frac{1}{2}$ in. in width. These are the clay walls to be used in dividing up the mould.

Decide on the first portion of the model to be moulded : in Fig. 123 this is the whole of the front of the figure. Take a strip of clay and press the edge firmly against the line drawn on the clay model, working from the base upwards from both sides until the wall is complete.

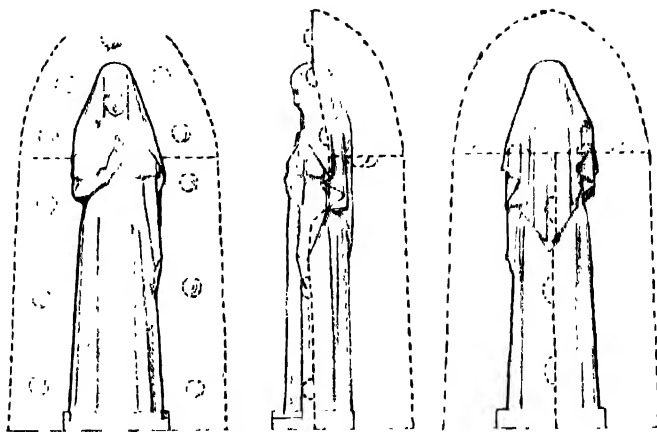
This wall should be as near as possible at right angles to the surface of the model, and should be quite sharp and clean where it touches the surface. Strips of clay should be placed behind the wall so that it receives support from the remainder of the model. Cover all except the portion to be moulded with soft wet paper to prevent any plaster from running on to the other parts. Now mix sufficient plaster to cover to the depth of about $1\frac{1}{2}$ in. and flick on with the fingers, gradually building up to the required depth, as described in waste moulding.

When the plaster is set, trim the edge of the mould until the whole of the upper edge of the clay wall is clear. Then clear away the wet paper and the clay supports. Carefully remove the clay wall, peeling it away with the fingers. Keys are now cut in the plaster edge as shown in Fig. 123. The handle end of a teaspoon turned in the fingers can be used.

Soap the joint with the soft soap mixture, being careful not to get the soap on to the clay. Continue with the other pieces of the mould in the same manner, moulding the lower pieces first and finally the upper one. Clean down the edges of the moulds, removing any surplus plaster that may have covered the joints and leave for half an hour before removing the pieces of the mould. This can be done by inserting the thin edge of a chisel or spatula, between the joints and gradually working them open ; water poured over the mould and into the joints will help considerably.

If it is required to make a slip pouring, it is necessary to dry the model thoroughly. Prepare the slip clay. It should be creamy in consistency, but not too thick to pour freely ; ordinary clay can be used, but the most satisfactory is semi-porcelain clay, a mixture of ordinary clay, china clay, china stone, and ground flint. It will take a higher temperature firing.

Put the sections of the mould together and tie them in place with a strong cord. Now pour the slip into the mould through the open base, until full. The dry plaster of the mould will immediately begin to absorb the moisture from the slip, causing a deposit to adhere to the



PIECE MOULD. Fig. 123. By this method many casts of a clay model can be obtained. The plaster mould is made in several pieces, keys (indicated above by dotted circles) being cut to ensure correct fitting.

By Harold B. Youngman, I. R. B. S.

inside of the mould, and the level to fall. Gradually pour in more slip, retaining the level inside the mould until there is a deposit of about $\frac{1}{4}$ in. in thickness. Then pour out the remainder of the slip and allow the mould to drain into a basin ; clean up the edge of the pouring. When this pouring has shrunk sufficiently to show a clear space between itself and the mould, it should stand without support.

Now ease away the pieces of the mould, top portions first, until quite free. The marks where the edges of the moulds meet should be worked away with a small wooden tool, and the pouring is ready to be dried and sent to the kiln. This dried pouring is very brittle and must be carefully treated.

BOOK LIST

Encyclopedia of Ornament, H. T. Bossert (Simpkin Marshall) ; *The Shape of Things (Design in everyday life)*, N. Carrington (Nicholson & Watson) ; *Art and Industry*, H. Read (Faber) ; *Woodcraft in Design and Practice*, R. Hooper (Batsford) ; *Joy Design*, J. Kay and C. T. White (University of London Press) ; *Nature in Design*, J. Evans (Oxford University Press) ; *Drawing & Design for Craftsmen*, R. S. Bowris (Cassell) ; *The Illustration of Books*, D. Bland (Faber) ; *Graphic Design*, J. Lewis and J. Brinkley (Routledge & Kegan Paul) ; *Design for Peasant Art*, K. Mann (Black) ; *Historical Architecture—the development of structure and design*, H. S. Braun (Faber) ; *Textile Design and Colour*, W. Watson (Longmans) ; *Design in Woodwork*, P. A. Wells (Batsford) ; *Woodwork Design*, E. H. Arnold (Pitman) ; *Handbook of Design and Motifs* (Tudor Publishing Co., New York) ; *The Art of Colour and Design*, M. Graves ; *Design Fundamentals*, R. G. Scott (McGraw Hill) ; *I wish I could draw*, P. V. Bradshaw (Studio) ; *How I draw Birds*, R. Green (Black) ; *How to draw Perspective to Scale*, W. H. Fuller (Studio) ; *How to draw Sail and Sea*, M. Leszczynski (Studio) ; *Sketching in Pen and Ink*, D. Maxwell (Pitman) ; *Design*, A. Bertram (Penguin) ; *Design This Day*, W. D. Teague (Studio).

PORTUGUESE

PORTUGUESE is a subtle, delicate, and rather difficult language. Its two chief difficulties are pronunciation and grammar. While it is not possible to achieve even a passable pronunciation without the help of a teacher, this Course provides a simple and practical approach to the study of the grammar and the acquisition of the essential vocabulary. It is, in fact, a first approximation to a basic Portuguese.

Courses on other modern foreign languages will be found in Vol. 2 (FRENCH), Vol. 3 (GERMAN), Vol. 4 (ITALIAN and SPANISH), and this volume (RUSSIAN). The Course on PHILOLOGY, which is complementary to the study of all languages, is in this volume

10 LESSONS

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By special arrangement with the Orthological Institute of Cambridge, and in collaboration with its editor, Mr. Charles Duff, each of the six Courses in French, German, Italian, Spanish, Portuguese, and Russian has been expressly prepared for PRACTICAL KNOWLEDGE FOR ALL from the respective handbooks and readers issued in pocket volumes for the Institute by Messrs. Nelson & Sons, Edinburgh and London. The copyright of these Courses is strictly reserved by the Orthological Institute of Cambridge.

Pronunciation, Articles, and Nouns

THE Portuguese Course consists of ten Lessons. Some are longer than others—the division of the Course into this number of Lessons is governed by the nature of the language and logic rather than by consideration of the time which the student must spend on each Lesson. If the learner can master one column a day, he can consider that good progress is being made. At the rate of one column a day, he should complete the Course in 14 weeks.

The two chief difficulties of Portuguese are pronunciation and grammar. The vocabulary is not difficult. As vocabulary is the most important part of language, it is a considerable comfort to the beginner to know that in this branch of Portuguese he can make rapid progress and thus in a comparatively short time reach the highly desirable reading stage. When this has been reached, he can listen to Portuguese broadcasts and, after a week or two, will find that he can follow them. From that to the speaking stage is entirely a matter of practice.

Pronunciation Difficulties

Portuguese pronunciation has been described as "the most delicate and complicated of the Romance languages." It would be unfair to the beginner to mislead him by an assurance that he can learn Portuguese pronunciation from any book. He cannot. Hence, he must in the first stage have a teacher. A teacher is essential if even a passable pronunciation is to be achieved, but a teacher is essential only for the first Lesson. After that, the student can proceed alone with every hope of achieving a good practical knowledge of the language.

A Neglected Language

As this language is one which has been too much neglected in Britain, a few words about it may not be out of place. It is a subtle, delicate, and rather difficult language, capable of a remarkable range. It has a great literature, and in one respect it has no equal among the languages of western civilization: in its lyrical poetry.

Those who study the language from this book may have other aims more practical than the desire to read lyrical poetry. But while those practical aims may be in the foreground of the student's desire, it is surely an encouragement to know that at the same time he is forging a key to a really delightful literature that has not been translated and, indeed, cannot be.

New Methods

One of the chief reasons why Portuguese has been neglected by English-speaking students is

that there are no books which set out in a straightforward and logical manner the delicate machinery of the language. This Course contains all the grammar that is ever likely to be required, and also a statement of essential vocabulary which must be known whatever the purpose may be for which the language is learnt.

Here the Portuguese verb is treated along new lines, and this highly important part of speech is set out in a way that simplifies learning as far as possible.

The student should not be frightened by the difficulties of pronunciation. They can be mastered, and any extra effort devoted to pronunciation will not be wasted. It is a matter of widespread experience that those who have attempted to rely entirely on books never learn to pronounce Portuguese well. Hence the necessity for a teacher.

ALPHABET AND PRONUNCIATION

The Portuguese alphabet is the same as the English, except that K, W, and Y are used only in words of foreign origin.

There are three accents: the acute (´), the grave (`) and the circumflex (^). The learner should not treat them lightly, for they indicate the pronunciation of vowels. The acute and circumflex also mark the stressed syllable.

Thus: ´ denotes an open stressed vowel
 ` denotes an unaccented unstressed open vowel
 ^ denotes a closed stressed vowel.

There is also the til (~), which indicates that a vowel so marked has a nasal sound. It is used only over a, o.

The cedilla (¸), as in French, indicates when ç before a, o, u must be pronounced hissing, like ss.

The diæresis (¨) indicates when two vowels come together that each is pronounced separately.

Vowels

The equivalents given below are approximate. If there is a European language of which the pronunciation cannot be mastered without the assistance of a native speaker, it is Portuguese.

A has three sounds:

á, a, à : a pure open sound like a in father
 a, before i and u in the same syllable : a deeper sound than a in father
 a, â, rather like the sound of a in about

E has four sounds:

e, é, ê, as a in English mate, state, or the e in café
 e, ê, a similar sound but shorter (e in met)
 e, like the second e in better, butter, or almost silent e in the diphthong ei, when it is similar to ê

I has three sounds :

i, long, as English *ee* in *feet*, or the French **i**, or German **ie**
 the other two sounds of **i** are the same but shorter

O has three sounds :

o, **ó**, **ò**, an open sound rather like **o** in *sort*
o, **ô**, like **o** in *note* (close)
o, like **o** in *move*—especially when it is the last letter of a word.

U has two sounds :

like English **oo** in *moot*, root (French **ou**) : the same, but shorter.

Diphthongs

Portuguese is rich in diphthongs, which are combinations of two vowels into one sound, as in the English word *boy* :

ai, **ae**, resemble English **i** in *size* (German **ai**, **ei**)
au, resembles English **ow** in *cow* (German **au**)
ao, a similar sound to **ow** in *cow* (German **au**)
eu, **éu**, like **ey** and **o** in *they who*, with emphasis on **e**, **é**
ei, **éi**, like **ey-ee** in English, emphasis on **ey**
oi, **ói**, like **oy** in *boy*, but a stronger **o** sound—

and so on with other combinations of vowels. But remember always that where one vowel carries an accent, that is the stressed vowel of the diphthong : **ié**, **ué**, **uí**. When two vowels come together, and it is desirable to pronounce them separately, then one may be marked with a diæresis (") : **ui**.

Triphthongs

A triphthong is a group of three vowels pronounced as one sound : **uai**, pronounced **ooahee** (silent **h**). They also are frequent in Portuguese, and follow the vowel sounds. They occur in certain plurals : **leal** (loyal), and plural **leais**.

Nasals

One of the chief characteristics of Portuguese is the frequency of nasal sounds, now expressed by the **til** (˘), formerly (and still often) expressed by an **n** or **m** after a vowel. The **til** is used only on **a**, **o**.

ã, **an**, **am**, are pronounced like French **in** in *vin*
õ, **on**, **om**, like French **on**, in *bonbon*
en, **em**, are pronounced rather like **en** in English length
in, **im**, like English **ing** in *sing* without the **g**
un, **um**, have no equivalent in English or French, but rather resemble the German **ung** without the **g** sound, as in *junge*

For those who know French, it is interesting to note that the Portuguese nasal sounds are weaker than the French and much more delicate. Also the nasal sound sometimes occurs where there is nothing to indicate it, as in the word **muito** (*much, very*) which is pronounced as if written **muíto**.

Consonants

c, is pronounced like **ss**
ç, is pronounced like **ks** (*acção*)
g, before **a**, **o**, **u**, is pronounced like **g** in *go*
g, before **e**, **i**, is pronounced like **zh** or French **j**
gu, is pronounced like **gw**
h, is silent—always
j, is like **zh** or French **j**
m, like English **m**, except where nasal (see above)
n, like English **n**, except where nasal (see above)
q, always used with **u**. **Que**, **qui**, pronounced **kay**, **kee**. **Qua**, **quo** pronounce **kwa**, **kwo**
r, is pronounced strongly
rr, is strongly rolled
s, between two vowels is like English **z**, otherwise like **ss**. At the end of words, it is often given a **sh** sound.
x, is like English **sh**
z, at the end of words like **sh** or sometimes like French **j**.

Double Consonants

ch, is like English **sh** or French **ch**
lh, like Spanish **ll**, Italian **gl**, or **ly** in English
nh, is like Spanish **ñ**, French **gn** or English **ni** in *onion*
th, rarely occurs. It is pronounced like **t**.

Liaison

Closely related words in a logical unit are run smoothly into each other. A Portuguese sentence often sounds like one word.

Accentuation

The accented syllable of a word is stressed and pronounced in a slightly higher tone than the others.

GENERAL RULES. Words ending in **a**, **o**, **e**, or those letters followed by **s**, have the accent on the syllable before the last.

Superlatives ending in **-imo** are accented on the antepenultimate syllable.

Words ending in a nasal vowel or diphthong, whether or not followed by **s**, are accented on the LAST syllable.

Words ending **i**, **u** are accented on the last syllable.

The acute and circumflex accents always indicate a predominant syllable.

The **s** in a plural does not change the accent.

Warnings on Pronunciation

Portuguese pronunciation is very difficult for the person whose mother tongue is English. It can be learnt only from a native, and then only by painstaking effort. The equivalents already given are at best makeshifts, and intended as a rough guide. Every letter and every combination of letters in Portuguese should be regarded as representing a sound or sounds different from anything known in English. The learner should miss no opportunity of listening to native speakers. Portuguese broadcasting stations provide ample practice for the listener, and there are excellent gramophone records available. Listen

carefully, and then try to imitate the sounds. But **avoid like the plague all those "imitated" pronunciations in print.**

In Portugal and in Brazil, and even in different parts of both countries, pronunciation differs. On the whole, Brazilian pronunciation is easier for the foreigner to follow. It is more distinct, and Brazilians speak more slowly.

Portuguese in Brazil

Many Brazilians refer to the language they speak as *Brasileiro*—Brazilian—but it is essentially Portuguese, the same language as spoken in Portugal, with certain differences in vocabulary and construction. In this course we keep to Portuguese, as we found that there are so many slight differences in orthography alone that to set them out would merely confuse the beginner. A little actual practice amongst Brazilians will soon bring home the differences, which are easily mastered.

Orthography

Until the 20th century orthography was chaotic, but it has now been settled—in Portugal by the Lisbon Academy of Sciences, in Brazil by the Academy of Letters. But *all* authors and journalists do *not* observe the rules.

In this course, for the text of grammar and vocabulary we follow the *Vocabulário Ortográfico da Língua Portuguesa* published in 1940 by the Academia das Ciências de Lisboa. On Dec. 29, 1943, Portugal and Brazil signed a covenant of agreement in regard to orthography.

NOTE: The texts of the *Lusiads* (pages 2660 and 2663) and of *Gulliver's Travels* (page 2684) are given in the orthography of the period in which those texts were published. This will help the student to become familiar with the spelling in which the language has been written until recent years, and in which all but the most modern books are printed.

ARTICLES

The words **the** and **a** are called ARTICLES, the former the DEFINITE, the latter the INDEFINITE article.

The Definite Article

For **the**, the equivalents are:

- O before a masculine noun
- A before a feminine noun
- OS before a masculine noun in the plural
- AS before a feminine noun in the plural

Examples

o livro, <i>the book</i>	os livros, <i>the books</i>
a pena, <i>the pen</i>	as penas, <i>the pens</i>
o pai, <i>the father</i>	os pais, <i>the fathers</i>
a mãe, <i>the mother</i>	as mães, <i>the mothers</i>

The old form **el** is used only before the word **rei**, *king*: **el-rei**, *the king*.

Contractions

With certain prepositions the definite article is contracted, thus:

Prepositions	Contractions
a, to	ao, à, aos, às, to the (masc. sing., fem. sing., masc. pl., fem. pl.)
de, of	do, da, dos, das
em, in, on	no, na, nos, nas
por, by, through	pelo, pela, pelos, pelas

Usage

The article is *not* used before a noun in the following cases:

Before names of towns and cities; place names, the word *casa* (*house*) when it means "at home" (*estar em casa*, *to be at home*); before the words *este* (*east*) and *oeste* (*west*); the chapters of a book (*capítulo primeiro*, *chapter the first*); the names of kings (*Carlos segundo*, *Charles the Second*).

Otherwise the general rule is to employ the article before every noun.

Examples

- o dia e a noite, *day and night*
- os grandes e os pequenos, *great and small*
- a natureza, *nature*
- Ele tem os cabelos loiros e os olhos pretos, *he has blond hair and black (dark) eyes*
- A paciência é uma virtude, *patience is a virtue*
- A química é uma ciência, *chemistry is a science*
- O homem é dotado de inteligência, *man is gifted with intelligence*
- O açúcar vende-se a tanto o quilo, *sugar is sold at so much the kilo*

Possession

The definite article is generally expressed before a possessive:

- o meu chapéu, *my hat*
- o chapéu do meu irmão, *my brother's hat*

But not after the verb *to be*:

- este chapéu é meu, *this hat is mine*.

Repetition

The definite article is repeated before every noun in a sentence:

- Nem o ouro, a prata, as honras, nem os prazeres têm benefícios duráveis para o homem, *neither gold nor silver, nor honours nor pleasures have lasting benefits for man*.

The Indefinite Article

- um before a masculine noun
- uma before a feminine noun
- uns before plural masculine nouns (meaning "some" or "a few")
- umas before plural feminine nouns

Contractions

Prepositions	Contractions
de, of	dum, duma, duns, dumas
em, in	num, numa, nuns, numas

Usage

The indefinite article must be used before each noun in a sentence:

um pai e uma mãe, a father and mother
um rapaz e uma rapariga, a boy and girl

NOTE.—UM, UMA mean not only *a, an* but also "one" um, dois, três, one, two, three

The indefinite article is omitted when in apposition:

A Cela dos Cardiais, comédia por Júlio Dantas,
The Cardinal's Supper, a comedy by Julio Dantas

It is omitted before profession, rank, and nationality:

é advogado, he is a lawyer
é capitão, he is a captain
é português, he is (a) Portuguese

It is also omitted after the verbs *ter* (to have) and *estar* (to be) with a noun indicating some quality of mind or body:

Eu estou com fome, I am with hunger (I am hungry)
Eu tenho vontade, I have a desire

NOTE THE FOLLOWING: meio litro, meia libra, half a litre, half a pound; que bela mulher, que pena, what a beautiful woman, what a pity; como soldado, like a soldier; tal homem, such a man; tal coisa, such a thing; correr risco, to run a risk; é costume, it is a custom; estar com pressa, to be in a hurry; falar em voz alta (baixa), to speak in a high (low) voice; ter direito a, to have a right to

It is unnecessary to learn the above on a first perusal, but the student should note that the Portuguese article is often omitted where we use it in English. On second perusal memorise these phrases.

The above treatment of the articles is the bare minimum necessary, and therefore every item must be thoroughly known. The articles are the most frequently recurring words in the language.

NOUNS

A noun is a word used for naming some person or thing.

Gender

There are two genders for Portuguese nouns: masculine and feminine.

And two numbers: singular and plural.

There is only one rule of gender which can be said to be without exception: that the names of *men* and *male animals* are *masculine* and the names of *women* and *female animals* are *feminine*. Gender otherwise is determined by *meaning* or *ending*.

The rules given below will help:

MASCULINE ARE: nouns ending in -á, -i, -ei, -ote, -o, -m and n, -ume, -au, -ê, -eu, -êu, -oi, -ói, -l, -r, -s, -az, -oz, -uz, -u, -ú.

FEMININE ARE: nouns ending in -a, -ade, -e, -ei, -ez, -ice, -gem, -ã, -ção, -são, -dão.

MASCULINE ARE: names of seas, rivers, lakes, mountains, winds, points of the compass, months, seasons (except *primavera*, *spring*), metals, letters of the alphabet, numbers, weights and measures, coins and any part of speech or a phrase used as a noun.

FEMININE ARE: abstract nouns, names of arts, sciences, professions, days of the week, most fruits, most names of cities

As the genders present many difficulties and the above rules have many exceptions, it is safest

for the student to learn the article with *every new noun* he meets, memorising article and noun together. This, though a little troublesome at first, is the best method in the end

Feminine of Nouns

Many masculine nouns have a feminine form, the general rule being that to form the feminine, add -a to the masculine:

marquês, <i>marquis</i>	marquesa, <i>marchioness</i>
português, <i>Portuguese</i>	portuguesa (fem.)
senhor, <i>sr., gentleman</i>	senhora, <i>Madam, lady</i>
filho, <i>son</i>	filha, <i>daughter</i>

Plural of Nouns

1. GENERAL RULE. Nouns ending in a vowel or diphthong or a nasalised vowel or diphthong (except *ão*) form the plural by adding -s to the singular:

a casa, <i>house</i>	as casas, <i>houses</i>
o filho, <i>son</i>	os filhos, <i>sons</i>
o herói, <i>hero</i>	os heróis, <i>heroes</i>
o pai, <i>father</i>	os pais, <i>fathers</i>

2. Nouns ending in *ão* can form the plural in one of the following three ways:

(a) by adding -s to the singular— they are few
(b) By changing *ão* into *ões*— these are the majority of *ão* nouns
(c) By changing *ão* into *ães*— these are few

When in doubt about the plural of an *-ão* noun, use the form *ões*.

a canção, <i>song</i>	as canções, <i>songs</i>
o leão, <i>lion</i>	os leões, <i>lions</i>

Learn the following essential *-ão* nouns which simply add -s to the singular to form the plural:

o grão, <i>grain</i>	os grãos
o irmão, <i>brother</i>	os irmãos
o cristão, <i>christian</i>	os cristãos
o cidadão, <i>citizen</i>	os cidadãos

Learn the following *-ão* nouns which change to *-ães* in the plural:

o cão, <i>dog</i>	os cães
o capitão, <i>captain</i>	os capitães
o pão, <i>bread</i>	os pães (<i>loaves</i>)

3. Nouns ending in a consonant usually add -es to form the plural.

a flor, <i>flower</i>	as flores
a mulher, <i>woman, wife</i>	as mulheres
a voz, <i>voice</i>	as vozes

4. Nouns (and adjectives) ending in -m, change the -m to n (silent) before adding -s:

o homem, <i>man</i>	os homens
o fim, <i>end</i>	os fins
a viagem, <i>voyages</i>	as viagens
o jardim	os jardins

5. Nouns ending in -s do not change:

o lápis, <i>pencil</i>	os lápis
------------------------	----------

6. Nouns ending in -l with accent on last syllable, change the -l to -is:

o animal, <i>animal</i>	os animais
o carril, <i>track</i>	os carris

ALTERNATIVE FORM. There is an alternative form for the superlative, but the beginner is advised to avoid it until he becomes familiar with the language. It is given here, so that he may recognize it in reading. It consists in adding *-íssimo* to the positive form of the adjective:

estudioso, estudiosíssimo, studious, most studious (note that the ending *-o* is dropped before adding *íssimo*).

alto, high, altíssimo, most high. In this form, *-co* and *-go* change to *-qu-* and *-gu-*: *largo, large, wide, larguíssimo*; *rico, riquíssimo*.

Also, if the positive ends in *-ão, -vel, or -z*, the superlative is formed as if it ended in *-n, -bil, -c*: *são, sane, healthy, saníssimo, most healthy. Amável, amiable, pleasant, amabilíssimo*.

A few adjectives take *-êrrimo* instead of *-íssimo*, as:

célebre, celebrated, celebêrrimo.

Irregular Comparison

The following adjectives have irregular comparatives and superlatives and, as they are of frequent occurrence, they should be memorised:

<i>bom, good</i>	<i>melhor, better</i>	<i>ótimo or boníssimo, best</i>
<i>mau, bad</i>	<i>pior, worse</i>	<i>péssimo or malíssimo, worst</i>
<i>grande, big</i>	<i>maior, bigger</i>	<i>máximo or grandíssimo, biggest</i>
<i>pequeno, small</i>	<i>menor</i>	<i>mínimo or pequeníssimo</i>
<i>alto, high</i>	<i>superior (mais alto)</i>	<i>supremo, altíssimo</i>
<i>baixo, low</i>	<i>inferior (mais baixo)</i>	<i>ínfimo, baixíssimo</i>
<i>interno, inside</i>	<i>interior</i>	<i>íntimo</i>
<i>externo, outside</i>	<i>exterior</i>	<i>extremo</i>

In the above, *mais alto, mais baixo* are commoner than the irregular forms

Note that the word *muito* (*much, very*) with an adjective is very often used to express the superlative, and the phrase *a maior parte de* (*the greater part of*) is very useful:

a maior parte dos meus amigos, the greater part of my friends (i.e. most of . . .).

Muitíssimo ("the veriest," superlative of *muito*) either by itself or with an adjective is frequently used to express the superlative:

Como está o Senhor? How are you (the gentleman)?
Muitíssimo melhor, very much better.

Position of the Adjective

The general rule is that the adjective follows the noun, but the following always precede it: *meio, half, mero, mere, muito, very, much, pouco, little, small.*

NOTE: *boa noite, good night* (exclamation), *uma noite boa, a fine night*:

um homem bom, an honest man, um bom homem, a good fellow:

um amigo certo, a dependable friend, um certo amigo, a certain friend:

um homem grande, a tall man, um grande homem, a great man:

um homem pobre, a poor man, um pobre homem, an unfortunate man:

um pobre diabo, a poor devil

NUMBERS

Cardinals

0 zero	31 trinta e um (uma)—
1 um, uma	and so on
2 dois, duas	40 quarenta
3 três	50 cinquenta (or cinqüenta)
4 quatro	60 sessenta
5 cinco	70 setenta
6 seis	80 oitenta
7 sete	90 noventa
8 oito	100 cento, cem
9 nove	101 cento e um (uma)
10 dez	102 cento e dois (duas)
11 onze	200 duzentos, -as
12 doze	300 trezentos, -as
13 treze	400 quatrocentos, -as
14 catorze	500 quinhentos, -as
15 quinze	600 seiscentos, -as
16 dezasseis	700 setecentos, -as
17 dezassete	800 oitocentos, -as
18 dezoito	900 novecentos, -as
19 dezanove	1000 mil
20 vinte	1001 mil e um (uma)
21 vinte e um (uma)	2000 dois, duas mil
22 vinte e dois (duas)	100.000 cem mil
23 vinte e três—	one million um milhão
and so on	two million dois milhões
30 trinta	

Essential Ordinals

1st primeiro	6th sexto
2nd segundo	7th sétimo
3rd terceiro	8th oitavo
4th quarto	9th nono
5th quinto	10th décimo

Miscellaneous

uma vez, once; duas vezes, twice;
(três vezes, three times, duplo, -a, double (also, dobrado);

triplice, triple, quádruplo, fourfold,
quintuplo, fivefold, centuplo, a hundredfold,
a metade, the half, um terço, one third;

um quarto, a fourth, um quinto, a fifth;
um décimo, a tenth, um centésimo, a hundredth;

Meio, -a, -os, -as, also means a half. It does not take the definite article after it.

Meia libra, half a pound; uma libra e meia, a pound and a half.

Meia hora, half an hour; uma hora e meia, an hour and a half.

You should read through the following, which need not be memorised at this stage. It must, however, be learnt on a second perusal:

Length is expressed thus:

um livro de 25 centímetros de comprimento
a book 25 centimetres long.

Breadth:

uma mesa de dois metros de largo (de largura)
a table two metres wide.

Similarly, *height* is expressed by *de alto* and *thickness* by *de grossura*.

The phrase "*or more*" is expressed by *e tantos*:

twenty years or more, vinte e tantos anos.
twice as much, three, four times as much
dois tantos, três tantos, quatro tantos.

"and a little over" ;

three pounds and a little over or a little over three pounds
três libras e picos.

o melhor de is used to express "the best part of" ;

o melhor de vinte milreís.
the best part of twenty milreís.

um par, a couple ; uma dúzia, a dozen ;
uma vintena, a score ; um século, a century ;
oito dias (uma semana), a week ; quinze dias
(uma quinzena), a fortnight ;
uma centena, a hundred, group of one hundred ;
um milhar, a thousand.

Date. o (dia) quinze de Janeiro do ano 1957,
the 15th January, 1957. But the 1st is expressed
thus :

no dia primeiro, or no primeiro de Maio, on the 1st
May

To ask the date, say :

A quantos estamos hoje ? or, Que dia do mês é hoje ?

Answer :

Estamos a dez, estamos no primeiro, it is the tenth, the first

Time of Day

Que horas são ? What time is it ?

é uma hora, it is one o'clock

é uma (hora) e meia, half past one

são duas horas, it is two o'clock

são duas horas e um quarto, a quarter past two

são quatro (horas) e vinte, twenty past four

são cinco menos um quarto, a quarter to five

faltam vinte para as cinco, twenty to five

são cerca das nove, it is about nine

são perto de cinco horas, it is nearly five o'clock

dão sete (horas), it is striking seven

pelas três horas, at about three o'clock

à dez da manhã, at ten in the morning

à quatro da tarde, at four in the afternoon

à onze da noite, at eleven at night

meio-dia, mid-day, meia-noite, midnight

Age

Quantos anos tem ? How old are you ?

or Qual é a sua idade ? What is your age ?

Tenho quarenta anos, I am forty years old

Sou mais velho do que ele, I am older than he

Sou mais velho do que ele quatro anos, I am four years
older than he

Aos vinte-e-quatro anos casou-se, He married at
twenty-four.

Titles of Rulers

Use Cardinals for kings, popes, etc., after
ten ; Ordinals up to ten.

João primeiro, John I ; Alonso treze, Alfonso XIII.

Note : Um, uma, dois, duas, are the only cardinals
which have a feminine form and um, uma, also has
uns, umas, plural meaning " some," uns dias, some days
The ordinals all have a feminine form, ending -a.

READING EXERCISE

Os Lusíadas de Camões, *The Lusíadas* of
Camões is the Portuguese national epic, and
it is easy to read. The word *Lusíadas* comes
from the Latin *Lusitania*, meaning Portugal,
and the poem tells the story of those Portu-
guese heroes who first made their way to India.
Here is the first verse, with a translation :

As armas e os barões assinalados,
Que da ocidental praia Lusitana,
Por mares nunca d'antes navegados,
Passaram ainda além da Taprobana,
Em perigos e guerras esforçados,
Mais do que prometia a força humana,
E entre gente remota edificaram
Novo reino que tanto sublimaram.

Arms and the barons (heroes) signalled (in fame)
Who from the western Lusitanian shore,
Over seas never before navigated,
Went beyond even Taprobana (Ceylon)
In perils and forced wars,
(Achieving) more than human strength promised,
And amongst a remote people built
A new kingdom which they glorified so much

Although you have not proceeded far into
Portuguese, you can already make the sense
of this. If you have a teacher, get him to go
over this verse with you a few times, until you
can pronounce the words well and recite the
whole. From now on, after learning a few
pages of grammar and your daily quota of
words, you must devote at least one period a
week to reading. The *Lusíadas*, of which six
verses with translation are given in Lesson 3,
will help you to appreciate the beauties of the
language.

LESSON 3

The Use of Pronouns

A PRONOUN is a word used to replace a noun.
The Portuguese pronouns are difficult,
and what is given in these pages must be
regarded as the bare essentials. The student
cannot afford to neglect what follows. The
pronouns are of very frequent occurrence,
hence their common usage must be thoroughly
mastered.

Personal Pronouns

	Singular	First Person	
			Plural
EU, I		nós, we	
me, me, to me (Objective)		nos, us, to us (Objective)	
de mim, of me		de nós, of us	
a mim, to me (indirect object)		a nós, to us (indirect)	
comigo, with me		connosco, with us	

Second Person — (For Reference Only)

tu, thou	vós, you
te, thee (object)	vos (object), you
de ti, of thee	de vós, of you
a ti (indirect object) to thee	a vós, to you (indirect object)
contigo, with thee	convosco, with you

Third Person : Masculine

êle, he	êles, they
lo, no, o, him, it (direct object)	los, nos, os, them (direct object)
LHE, to him, to it (indirect object)	LHES, to them (indirect object)
consigo, with him, with it	consigo, with them

Third Person : Feminine

ela, she	elas, they
la, na, a, her (direct object)	las, nas, as, them (direct object)
LHE, her, to her (indirect object)	LHES, to them (indirect object)
consigo, with her	consigo, with them

The word *mesmo* is used for emphasis : *Eu mesmo, I myself*. *Ele mesmo, he himself*, etc. It is *mesma* in the feminine, and *mesmos, -as*, in the plural : *nós mesmos, we ourselves* (masc.).

The direct object pronouns answer the question : Who or what was the first or direct recipient of the action : the indirect object pronouns represent the secondary or indirect recipient. Thus in the sentence :

I shall tell it to him

I is the subject, *it* the direct object, and *him*, indirect object.

NOTE.—The subject pronouns are often omitted before a verb : *falo, I speak*. Before proceeding, learn *all* that has been given.

Orthographic Changes

The personal pronouns *o, a, os, as* (direct object), change to *lo, la, los, las*

(a) when preceded by a part of a verb ending in -R, -S, or -Z, and then the -r, -s, or -z is dropped. Thus, instead of saying or writing *chamar-o, to call him*, we say and write *CHAMA-LO*. *TRAZE-LO, to bring it*. *AMÁ-LO, to love her*. *EU FI-LO, I did it*

(b) when following the pronouns *nos* or *vos* and the adverb *EIS* (meaning "here is" or "here are"). Then, *nos, vos* and *eis* drop their final -s. Thus : *dizem-nos-o, they tell it to us*, becomes *DIZEM-NO-LO*

and
ei-lo, here he (it) is
dava-vo-lo, he gave it to you

(c) The pronouns *o, a, os, as*, become *no, na, nos, nas* when preceded by a nasalised sound

Thus :
deixam-no, they leave it
dão-no, they give it
estão-no fazendo, they are doing it

NOTE : *me, te* and *lhe*, when followed by *o, a, os, as*, drop their *e*, thus :

mostrei-os, I showed them to you (thee)

Position of the Pronouns

(1) In independent positive or affirmative sentences, the object pronouns *me, te, se, lhe, o, a, os, as*, follow the verb, thus :

tenho-o, I have it (not o tenho)
conheço-o, I know him

(2) If a direct and also an indirect object pronoun come in the same sentence, the indirect precedes the direct, thus :

dá-mo, he gives it to me
contei-lho, I told it to him
êle disse-no-lo, he told it to us

(3) In simple negative sentences with one object pronoun, that pronoun comes before the verb, thus :

Não o creio, I do not believe it (but creio-o)
êle não me quer, he does not like me

(4) In negative sentences, when there is both an indirect and a direct object pronoun, the indirect precedes the direct, and both come before the verb, thus :

Não mo deu, he did not give it to me
Eu não lho expliquei, I did not explain it to him

(5) In the imperative, the objective pronouns follow the verb, indirect before the direct, thus :

Diga-mo, tell it to me (tell me it)
faça-me o favor, do me the favour (Please)

(6) In negative imperatives, the object pronouns precede the verb (as in 4 above) :

Não se engane, do not deceive yourself (make no mistake)

The above rules are indispensable, and must be known thoroughly.

How to say "You"

General rule : *You* in ordinary conversation is translated by :

o senhor (masc singular), *os senhores*, in the plural ; *a senhora* (fem. singular), *as senhoras*, in the plural ; and a *senhorita* or a *senhorinha* when speaking to an unmarried woman in Brazil. In Portugal a *senhora* is used for both.

In each case the third person of the verb follows, either in the singular or plural, as the occasion demands. Thus :

When will you do it? Quando o fará o Sr. ? a Sra ?
What did you say to him? O que lhe disse o Sr. ?
Are you going to write to them? Vai o Sr. escrever-lhes ?

What did you say? O que disse o Sr., a Sra ?

Until the student has become thoroughly familiar with the language, he should not attempt to use any of the forms given below. They are full of pitfalls, while the above is always safe. What is given below is for reference, to assist in reading, and need not be learnt on a first perusal. *You* is rarely omitted in Portuguese.

For Reference Only

TU, thou : now used in poetry, to address God, amongst near relatives and close friends, to address children, servants, and inferiors. It can indicate affection or contempt.

VÓS : You, ye, plural of *tu*, now used only by orators, preachers and in prayer. Formerly common and still used in literature, it has become comparatively rare in speech. The foreigner must avoid it.

VOSSA EXCELENCIA, plural *Vossas Excelências* (V.Exa-s) : "Your Excellency," but is much used in ordinary polite conversation in Brazil. Takes the third person of the verb (like *o senhor, os senhores*) and so, if you wish to be very polite to somebody, say "Vossência (s)," the abbreviated form. *Não pode Vossência fazê-lo ? Can you (Y.E.) not do it ?*

VOSSA SENHORIA (V.S^a) : formerly a title of nobility, now rarely used, except in very formal official and commercial correspondence.

VOSSA MERCÊ (Vms^a) : Literally "Your Grace," is a little more familiar than V.S.^a. It is pronounced Vo'cê. Much used amongst friends, and, when abbreviated to Você (V^a) is the still more familiar term used among intimates or when speaking to work-people, especially in Brazil.

When speaking to a lady : In ordinary polite conversation, always say **MINHA SENHORA** for *Madame* : Bom dia, minha senhora. This is usually the form for married and unmarried ladies. In correspondence, always use Ex.^a. **SENHORA DONA (D^a)** followed by the full name : Ex.^a. Senhora D^a. Maria de Vasconcelos.

MENINA : "girl," often used for Miss. A menina Francisca, Miss F. Otherwise Senhora is used.

O Senhor precedes a title, degree or rank : O Sr. Comendador, o Sr. Capitão, o Sr. Doutor.

SENHORES E AMIGOS : The usual opening of a commercial letter, corresponding to our "Dear Sirs" or "Gentlemen," and in the body of the letter you is translated by o nosso amigo or os nossos amigos.

The definite article is often used for you. What did you say, Mary? o que diz a Maria?

From what has been given above, and it does not exhaust the subject, the student will see that Portuguese is delicate and subtle in its formality, perhaps more so than any other European language. Hence it is worth while to take a little care. Brazilian usage is less formal.

Possessive Pronouns

	Masculine		Feminine		
	Sing.	Plu.	Sing.	Plu.	
1st Pers.	meu	meus	minha	minhas	mine, my
2nd Pers.	teu	teus	tua	tuas	thine, thy
3rd Pers.	seu	seus	sua	suas	his, her, its
1st Pers.	nosso	nosso	nossa	nossas	ours, our
2nd Pers.	vosso	vossos	vossa	vossas	yours, your
3rd Pers.	seu	seus	sua	suas	theirs, then

The third person seu, seus, sua, suas, it should be noted, are equivalent to the English, his, her, hers, its, their, theirs, and also your, yours (see the preceding section for equivalents of you). But if there is any ambiguity, then use in addition a pronoun which will clarify the sense :

Perdeu o Sr. a sua luva ou a dela, Have you (Sir) lost your glove or hers?

A boca dele, his mouth

A boca dela, her mouth

O dinheiro dele, his money

It is a peculiarity in Portuguese that these pronouns are often preceded by the definite article, both when they are used in an adjectival sense and as pure pronouns :

O meu chapéu, my hat

O nosso, ours

O seu, his

As suas, theirs (fem.)

RULE : The possessive agrees in gender and number with the thing possessed and not with the possessor as in English.

minha boca, my mouth

meu vestido, my dress

a culpa é minha, the fault is mine

Com sua licença, with his, her, your permission

If the nouns differ in gender or number, repeat the possessive before each one :

meu pai e minha mãe, my father and mother

The word **próprio (a, -os, -as)** meaning "own" can be added for emphasis :

minha própria mão, my own hand

meu próprio dinheiro, my own money

NOTE :

um meu amigo, um amigo meu, a friend of mine

muitos amigos meus, many friends of mine

é muito meu amigo, he is a great friend of mine

um seu criado, one of your servants

notícias suas (do Sr.), news of you

muitas lembranças minhas, with best regards

eu fiz as minhas despedidas, I said (bid) farewell

Demonstrative Pronouns

Masculine		Feminine		Invariable
Singular	Plural	Singular	Plural	
êste, this (one)	êstes	esta	estas	isto
êsse, that	esses	essa	essas	isso
aquêle, that	aquêles	aquela	aquelas	aquilo

isto, êste, indicates an object close to the speaker
isso, êsse, refers to an object near the person spoken to
aquilo, aquêle, to an object removed from both speakers

The student is advised to keep to **êste, êsse, and aquêle**, which can be used for most purposes, and to avoid **isto, isso, aquilo** until he has become familiar with the language. But he should know the phrase **isto é**, which means "that is," "that is to say"; and **isto convém**, that is all right, that suits.

Contractions

The demonstratives when used with the prepositions **em (in)** and **de (of)** are contracted, thus :

nêste, nesta (-s)	dêste, desta (-s)
nisto	disso
naquilo	daquêle

There is contraction with the preposition **a**, only with **aquêle** and **aquilo** : **àquêle, -s, -a, -as, aquilo**.

Note also the following :

outro, -s, -a, -as, other tanto, -a, -os, -as, so much
o mesmo, a mesma, os mesmos, as mesmas, the same
tal, such, such a : outrem, somebody else. The plural of tal is tais.

The English "he who," "she who," "they who," translated by o, a, os, as, followed by **que** or **aquêle** (s, a, -as).

Relative Pronouns and Interrogatives

The Portuguese forms for both are the same :

QUEM, who, whom	
QUE, what, which (quê when emphatic or written alone)	
QUAL, which of	-
QUANTO, how much, how many	
CUJO, of which	

QUEM is always invariable and refers only to persons
Quem está lá? Who is there?

Quem são os pais dêstes meninos, Who are the parents of these children?

Não sei a quem eu falava, I do not know to whom I was speaking

De quem é esta pena, Whose is this pen?

Els quem, means "one who"
Els aquil quem falava, Here is the one who (he who) spoke, was speaking

Que as *interrogative*. **Que**, written **quê** when it is an emphatic interrogative or stands alone, can be used for persons or things, but the latter is more common :

Que diz o Sr. ? What do you say ?
Ô quê ? What? (emphatic) What's that you say ?
Que quere dizer ? What do you mean ?
Que há de novo ? What is the news ?
Que quere o Sr. ? What do you want ?
Que se passou ? What happened ?

Que is also used to mean "what sort of"
Que mulher é esta ? What sort of a woman is this ?
 and in exclamations to express "What a . . ." **Que bonita rapariga :** What a pretty maid. And **que** de followed by a noun has a similar meaning. **Que de tempo perdido**, How much, or What a loss of time !

Que as a *relative* is much the commonest and, for practical purposes, can be considered the only one used in speech, and it is used without distinction of gender and number-- that is, it is invariable :

o homem que, the man who (whom)
a mulher que, the woman who (whom)
sou eu que falo, it is I who speak
O Sr. sabe o que quero, You know what I want
Nós somos os que falamos, It is we who speak
o amigo de que (a que) eu falo, the friend of (to) whom I speak

The *relative pronoun* must never be omitted in Portuguese :

o dinheiro QUE eu tenho, the money I have
as casas QUE eu vendi, the houses I sold

QUAL, plural **QUAIS**, means "which of," "which one of." Also "who," "whom." It is both an interrogative and a relative (but when a relative it is usually preceded by **o**, **a**, **os**, **as**). It is stronger than **QUE**, and is mostly used as an interrogative, a usage to which the beginner is advised to keep

Qual dos dois ? Which one of the two ?

RULE : To express *which*, *what* in a general sense, use **que** ; in a limited sense, use **qual**. For example, if you wish to inquire of a person *what town* he or she comes from say :

De que cidade vem o Sr. ?

But if you *know* that he is a Lancashire man, possibly from either Liverpool or Manchester, you would say :

De qual cidade vem o Sr. ?

And if half a dozen people were brought before the police who were looking for *one* man, the inspector would say to his officers :

Qual é o homem ? Which (of these) is the man ?

CUJO, **-a**, **-os**, **-as**, always agrees with the word *before which it stands* in gender and number, and corresponds to :

de quem, of whom
de que, of which, of what
do qual, of which

It is much used in writing but seldom in speaking.

O homem cuja mulher é morta, the man whose wife is dead
O rapaz cujo irmão está aí, the boy whose brother is there

Quanto, **-a**, **-os**, **-as**, *How much, how many ?* Agrees in number and gender with the following noun.

Quanto gastou ? How much did you spend ?
Quantas noites ? How many nights ?

It is also used as a relative, being equivalent to **que**, or **todo(-a, -os, -as)**, or **aquêle (-s)** :

Fiz quanto pude, I did all I could

But the beginner may avoid this usage, and learn **quanto** only as an interrogative.

Miscellaneous

The following list of what can be called "indefinite" pronouns should be memorised :

Variables

algun, **-a**, **alguns**, **algumas**, some, any such
nenhum, **-a**, **-uns**, **-umas**, none, none such
outro, **-a**, **-os**, **-as**, other, another
tal, **tais**, such a one, such
certo, **-a**, **-os**, **-as**, certain
todo, **-a**, **-os**, **-as**, all
tanto, **-a**, **-os**, **-as**, so much, many
qualquer, pl. **quaisquer**, whoever, whatever
um e outro, one and the other
ambos, **-as**, both
nem um, **nem outro**, neither one nor the other
muito, **-a**, **-os**, **-as**, much
cada um, **uma**, **uns**, **umas**, each one, everybody
alguma coisa, something

Invariables

alguém, somebody, anybody
ninguém, nobody, none
outrém, somebody else
cada (m and f.), each
tudo, everything, all
quem quer, whosoever
algo, something
diversos,
vários, different, various

One, They, People

The German "*man*" and French "*on*," meaning *one, they, or people*, is expressed in Portuguese :

1. By the reflexive form of the verb (see p. 2672)
2. By the third person plural of the verb, without a pronoun. **dizem**, they say
3. **Ninguém**, **o homem**, or **todos** :
 (O homem não) **ninguém** pode lembrar-se de tudo, one cannot remember everything ; **todos** gostam de falar, people like to speak
4. **A gente** : **a gente** sabe que, people know that

READING EXERCISE

Here we continue reading the *Lusiads* in the unreformed spelling and with the aid of a translation. You may ask : "Why begin reading poetry ?" The answer is that it is to help you to master the pronunciation, which is a real difficulty in Portuguese. You must try to learn these six verses by heart, if possible with the aid of a teacher. It will repay the trouble. The exercise, furthermore, gives just as good practice as prose in grammar and vocabulary. Verse 1 is repeated from page 2660 for convenience.

CANTO PRIMEIRO

I

As armas e os barões assinalados,
 Que da ocidental praia Lusitana,

Por mares nunca d'antes navegados,
Passaram ainda além da Taprobana,
Em perigos e guerras esforçados,
Mais do que prometia a força humana,
E entre gente remota edificaram
Novo reino que tanto sublimaram ;

FIRST CANTO

I

*Arms and the barons (heroes) signalised (in fame)
Who from the western Lusitanian shore,
Over seas never before navigated,
Went beyond even Taprobana (Ceylon)
In perils and forced wars,
(Achieving) more than human strength promised,
And amongst a remote people built
A new kingdom which they glorified so much ,*

II

E também as memórias gloriosas
D'aquelles Reis, que foram dilatando
A Fé, o Imperio ; e as terras viciosas
De Africa e de Asia andaram devastando ;
E aquelles que por obras valerosas
Se vão da lei da morte libertando—
Cantando espalharei por toda parte,
Se a tanto me ajudar o engenho e arte.

*And also the glorious memories
Of those kings who went out disseminating
The Faith, the Empire , and the base (vicious) lands
Of Africa and of Asia went laying waste ;
And those who by valorous works
Exclude themselves from the law of death—
I shall rehearse it singing everywhere,
If so far art and genius aids me.*

III

Cessem do sábio Grego e do Troiano
As navegações grandes que fizeram ;
Calle-se de Alexandro e de Trajano
A fama das victorias que tiveram ;
Que en canto o peito illustre Lusitano,
A quem Neptune e Marte obedeceram :
Cesse tudo o que a Musa antiga canta--
Que outro valor mais alto se alevanta.

3

*Cease (from speaking) of the wise Greek and of the
Trojan
Of the great voyages which they made ;
Be silent about Alexander and of Trajan
(Of) the fame of the victories they had ;
For I sing of the Lusitanian soul (bosom)
Which (even) Neptune and Mars obeyed :
Cease of all which the ancient Muse sings—
For another valour (and higher) arises.*

IV

E vós, Tagides minhas, pois creado
Tendes em mi um novo engenho ardente,
Se sempre em verso humilde celebrado
Foi de mi vosso rio alegremente,
Dai-me agora um som alto e sublimado,
Um estylo grandiloquo e corrente,
Porque de vossas aguas Phebo ordene
Que não tenham inveja ás de Hippocrene.

*And you, my nymphs of the Tagus, since created
You have in me a new ardent genius,
If always in modest verse (I) celebrated
Your river merrily,
Give me now a lofty and sublime note,
A grand and flowing style,
In order that of your waters Phoebus may ordain
That they shall not envy those of Hippocrene.*

Dai-me uma furia grande e sonora,
E não de agreste avena ou frauta ruda,
Mas de tuba canora e bellicosa,
Que o peito accende, e a côr ao gesto muda
Dai-me igual canto aos feitos da famosa
Gente vossa que a Marte tanto ajuda,
Que se espalhe e se cante no universo,
Se tão sublime preço cabe em verso.

*Give me a great and sonorous frenzy,
Not one of the wild countryside or of an artless flute
But one of a singing martial trumpet,
That fires the breast and changes the beat of the heart :
Give me song equal to the famous deeds
Of your famous people which Mars has helped,
That I (may) spread and sing it in the universe,
If such feats can go into verse.*

VI

E vós, ó bem nascida segurança
Da Lusitana antiga liberdade,
E não menos certissima esperança
De augmento da pequena Christandade ;
Vós, ó novo temor da Maura lança,
Maravilha fatal de nossa idade,
Dada ao mundo por Deus, que todo o mande,
Para do mundo a Deus dar parte grande.

*And you, well born security
Of old Lusitanian liberty
And not less certain hope,
For growth of little (nascent) Christianity ;
You, new terror of the Moorish lance
Fatal marvel of our age,
Given to the world by God, to rule it all,
So that of the world God may have a great part.*

LESSON 4

Regular and Auxiliary Verbs

A VERB is a word indicating an action, or saying something about some person or thing.

The Portuguese verb is not easy and, indeed, has one form—the personal infinitive—which is peculiar to the language. But it is not necessary to know *all* the parts, even of the regular verbs. As for irregular verbs, although there are many of them, it is necessary to know only the few which occur frequently ; and of

these only the most useful parts must be known. In the pages which follow, the essentials are given ; and they must be memorised. In light type, the less important parts of the verb are outlined, and they need not be memorised on a first perusal. What is given in bold type must be known thoroughly.

Parts of the Verb which Must be Known

(a) The Infinitive, i.e., “ that part of a verb

which names the action, without reference to any doer, and is, therefore, not limited by person or number." Thus: *Falar, to speak*.

- (b) The **Present Tense**, which represents the English forms *I —, I do —, I am — ing*.
- (c) The **Preterite** or **Past Definite**, which is very frequently used in Portuguese and corresponds to the English Simple Past: *I spoke, Eu falei*.
- (d) The **Simple Future**, which corresponds to the English *I shall — (speak) : Falarei*.
- (e) The **Past Participle**, which is used to form compound tenses, and often as an Adjective: *I have bought—bought* is the Past Participle.

The *infinitive* of all Portuguese Verbs has one of three endings: **-AR, -ER, -IR**. Verbs so ending are known as 1st, 2nd, and 3rd conjugations. The ending **-AR** is of much the most frequent recurrence. It is the ending used to form all new verbs admitted to the language.

TABLE OF INFLEXIONS OF REGULAR VERBS (For Reference only)

Infinitives :	1st Conjugation -ar	
	2nd Conjugation : -er	
	3rd Conjugation : -ir	
Present Participles	1 -ando	Past Participles { 1 -ado
	2 -endo	2 -edo
	3 -indo	3 -ido
Indicative		
Present Tense	1 -o, -as, -a, -amos, -ais, -am	
	2 -o, -es, -e, -emos, -eis, -em	
	3 -e, -es, -e, -imos, -is, -em	
Imperfect Tense	1 -ava, -avas, -ava, -ávamos, -aveis, -avam	
	2 -ia, -ias, -ia, -íamos, -íeis, -iam	
	3 -ia, -ias, -ia, -íamos, -íeis, -iam	
Past Definite	1 -ei, -aste, -ou, -ámos, -astes, -aram	
	2 -i, -este, -eu, -emos, -estes, -eram	
	3 -i, -iste, -iu, -imos, -istes, -iram	
Future all conjugations	-ei, -ás, -á, -emos, -eis, -ão	
	added to the infinitive	
Conditional all conjugations	-ia, -ias, -ia, -íamos, -íeis, -iam	
	added to the infinitive	
Imperative	2 3 1 2 3rd person	
	1 -a, -e, -emos, -ai, -em	
	2 -e, -a, -amos, -ei, -am	
	3 -e, -a, -amos, -i, -am	

For full conjugations turn to page 2666.

General Rule for Regular Conjugations

To form any tense of any regular verb, add the inflexions in the table in this page to the "stem" of the verb, that is, the part which remains when the infinitive ending **-ar, -er, -ir**, is discarded. For the future and conditional, add the inflexions to the full infinitive.

Thus : **FALAR, to speak**—Stem : **FAL-**
Present Tense : **falo, falas, fala, falamos, falais, falam.**

Now turn to the Conjugation of Model Regular Verbs in page 2666.

Orthographic Changes—(For Reference)

There is a considerable number of verbs which, in order to preserve the sound in the stem, are subject to changes in spelling which make them appear slightly irregular, whereas in fact they are not so. Thus :—

- Verbs ending in **-gar**, take in a **u** before an **e** following the **g** : **Pagar, to pay** Pres. Inf. **Pago, pagues, pague, etc.**
- Verbs in **-car**, take **qu** before a following **e** : **Tocar, to touch, Toco, toques, toque, etc.**
- Verbs in **-çar** lose the cedilla before **e** : **Começar, to begin. Começo, comesces, comece, etc.**
- Some verbs in **-jar** change the **j** to **g** when it is followed by **e** : **Viajar, to travel Viajo, viages, viaje, etc.**
- Verbs in **-cer** take a cedilla before **a** and **o** : **Conhecer, to know. Conheço, conhececes, conhece, etc.**
- Verbs ending in **-ger**, change **g** to **j** before **a** and **o** : **Proteger, to protect Protejo, proteges, protege, etc.**
- Verbs ending in **-guer**, drop the **u** before **a** and **o** : **Erguer, to raise. Ergo, I rise.**
- Verbs ending in **-guir, -quir**, change the **gu** or **qu** to **g** and **c** before **a** and **o** : **Seguir, to follow Sigo, I follow.**

Note also the following :

- If the stem ends in **-z**, the final **e** of Third Person Singular is dropped **Conduzir, to conduct. Ele conduz, he conducts.**
- All compound verbs follow the rules of conjugation of the simple verb, whether it is regular or irregular. Thus **perseguir** is conjugated like **seguir**.
- Verbs of the **-ir** conjugation whose stems end in **a** (**cair, to fall, sair, to go out**) take an **i** before endings beginning with **a** or **o**, and in third person singular present indicative they have **i** (not **e**) : **caio, caís, cui, saio, saís, sni.** Note the accented **i**.
- Verbs ending in **-guir** drop the dieresis in those parts in which the **-üi-** sound is retained without the necessity for a dieresis. That is, before **-a** and **-o** : **arguo, I accuse, from arguir.**

What the Various Tenses Represent

For the **Personal Infinitive**, see page 2666.

The **Present Tense** corresponds not only to the English as in *I speak*, but also to the emphatic present *I do speak*, and the continuous present *I am speaking*.

The **Imperfect** represents an incomplete action : *I was speaking, I continued speaking*.

The **Past Definite** or **Preterite** represents a fully completed action : *I spoke, then I spoke and stopped immediately*.

The compound past (formed with an auxiliary and the past participle, as *Eu tenho falado*, literally *I have spoken*) is not much used, and the student must decide whether the past action was completed or not completed, and use either the Past Definite or Imperfect accordingly.

The Subjunctive

This is one of the difficulties of Portuguese, especially for the English learner who is unacquainted with Latin or a Latin language. But

with a little ingenuity he can avoid it altogether in the sentences which he makes himself, and he can generally form a good idea of its meaning when he hears it or reads it. What follows need not be learnt on a first perusal.

The subjunctive is used after *desire, wish, petition, imprecation*, and *emotions* (hope, fear, pleasure, etc.). *Desejo que seja bom, I wish you to be good.*

It is used after verbs of *saying, knowing, believing*, and *thinking*, when the verb of saying, knowing, thinking, or believing is in the *negative*: *Eu não creio que seja êle, I do not think it is he.*

It is used in dependent clauses introduced by the relatives *quem, que, o que, cujo*, when there is doubt of the existence of the person or thing referred to. *Comprarei uma casa que me agrade, I shall buy a house which pleases me* (the actual house in question may not exist, for all the speaker knows).

It is used after the following conjunctions:

<i>antes que, before</i>	
<i>assim que, as soon as</i>	
<i>até que, until</i>	
<i>em quanto que, as long as</i>	
<i>logo que, as soon as</i>	<i>como, as</i>
<i>quem quer que, whoever that</i>	
<i>como quer que, however</i>	
<i>qualquer que, whatever</i>	<i>talvez, perhaps</i>
<i>por bom que, however good</i>	
<i>seja que, let it be who</i>	
and note: <i>que eu saiba, as far as I know</i>	

The future subjunctive is used to refer to a future uncertainty as:

Quando Deus quiser, when God wishes
Quando vier, when he comes

CONJUGATION OF "MODEL" REGULAR VERBS

	First Conjugat in ar falar, to speak	Second Conjugat. in er comer, to eat	Third Conjugat. in ir partir, to leave
<i>Present Particples</i>	falando	comendo	partindo
<i>Past Particples</i>	falado	comido	partido
<i>Present</i>	falo falas fala falamos falais falam	como comes come comemos comeis comem	parto partes parte partimos partis partem
<i>Imperfect</i>	falava falavas falava falávamos faláveis falavam	comia comias comia comíamos comieis comiam	partia partias partia partíamos partieis partiam
<i>Preterite or Past Definite</i>	falei falaste falou falamos falastes falaram	comi comeste comeu comemos comestes comeram	parti partiste partiu partimos partistes partiram

<i>Pluperfect</i>	falara falaras falara faláramos faláreis falaram	comera comeras comera comêramos comêreis comeram	partira partiras partira partíramos partíreis partiram
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<i>Future</i>	falarei falarás falará falaremos falareis falarão	comerei comerás comerá comeremos comereis comerão	partirei partirás partirá partiremos partireis partirão
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<i>Imperative</i>	fala (tu) (não fales tu) fale (êlc, ela) falemos (nós) falai (vós) (não faleis vós) falem (êles, elas)	come (não comas tu) coma comamos comei (não comais vós) comam	parte (não partas tu) parta partamos parti (não partais vós) partam
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For Reference

	First Conjugat in ar	Second Conjugat in er	Third Conjugat in ir
<i>Conditional Present</i>	falaria falarias falaria falaríamos falaríeis falariam	comeria comerias comeria comeríamos comeríeis comeriam	partiria partirias partiria partiríamos partiríeis partiriam
<i>Subjunctive Present</i>	fale fale fale falemos faleis falem	coma comas coma comamos comais comam	parta partas parta partamos partais partam
<i>Subjunctive Pluperfect</i>	falasse falasses falasse falássemos falásseis falassem	comesse comeses comesse coméssemos comésseis comessem	partisse partisses partisse partíssemos partísseis partissem
<i>Subjunctive Future</i>	falai falares falar falarmos falardes falarem	comei comeres comei comermos comerdes comerem	partir partires partir partirmos partirdes partirem

The Personal Infinitive

The personal infinitive is peculiar to Portuguese and the most frequent use corresponds to the English in which a possessive adjective is followed by a noun, or a present participle used as a noun, as in such phrases as *my love, my speaking, my eating*. It is a delicate form, with many subtleties, which must be studied in a more advanced work than this, but it is given here so that the learner will not be startled should he meet it. In the 1st and 3rd persons singular it is the same as the normal infinitive. The other endings are emphasised below:

talar eu, *my speaking*
 falares tu, *thy speaking*
 falar êle, ela, Vm^{as}, *his, her, your speaking*
 falarmos nós, *our speaking*
 falardes vós, *your speaking*
 falarem êles, elas, Vm^{as}, *their, your speaking*

comer eu
comeres tu
comerêis, ela, Vm^{es}
comermos nós
comerdes vós
comerem êles, elas, Vm^{es}

partir eu
partires tu
partirêis, etc.
partirmos nós
partirdes vós
partirem êles, etc.

tem, he, she has, does have, is having
temos, we have, etc.
tendes, you have, etc.
têm, they have etc.

Auxiliary Verbs

There are four auxiliary verbs in Portuguese, so called because they are used to form compound tenses of other verbs. They are:—

SER, to be, to exist, in a permanent sense

ESTAR, to be, to happen to be, in a temporary, or adventitious sense

TER, to have to possess

HAVER, to have, rarely used, except to form the future (see below) and impersonally

Of the verb **haver**, it is necessary to know only the following parts:

Present Tense (Indicative)

hei, I have
hás, thou hast
há, he has
hавemos or (h)emos, we have
haveis, (h)eis, you have
hão, they have

This tense is most important, because the inflexions added to the infinitive to form the future of ALL verbs are in fact the present tense of **haver** without the "h."

SER, to be, infinitive

serei, I shall be
serás, thou wilt be
será, he, she, it will be
seremos, we shall be
seréis, you will be
serão, they will be

FALAR, to speak, future **falarei, falarás, falará**, etc.
HAVER is used for the impersonal, there to be. Thus **há** means there is

The remaining essential parts of **HAVER** are:

Imperfect (3rd person singular) **havia**, there was

Preterite or past definite **houve**, there was

Future: **haverá**, there will be

These forms are not used in the plural.

NOTE: **há dinheiro**, there is money. **Não há dúvida alguma**, there is no doubt. **Não há nada**, there is nothing.

DEVE HAVER, there must be. **Deve haver gente**, there must be many people. **Deve ter havido muita gente**, there must have been many people

HAVER is used for the weather and for lapse of time, thus: **Há um mês, há um ano, a month ago, a year ago, há dois anos, two years ago, há muito, a long time ago, há pouco, a short time ago, há bom tempo, mau tempo, there is good, bad weather**

TER is the ordinary verb for *to have*, and it is used to form the compound tenses of other verbs. For this reason it is very important, and the full conjugation is given below, although it is necessary at this stage to learn only the ESSENTIAL tenses: Infinitive, Present Indicative, Past Definite, Future Simple, Past Participle, and Present Subjunctive (for Imperative).

CONJUGATION OF TER, TO HAVE

Infinitive

ter, to have, to hold, to possess

Present Participle

tendo, having

Past Participle

tido, had

Present Indicative

tenho, I have, do have, am having
tens, thou hast, dost have, art having

Imperfect Indicative

tinha, I had, was having, or used to have
tinhas, thou hadst, etc.
tinha, he, she had, etc.
tinhamos, we had, etc.
tinheis, you had, etc.
tinham, they had, etc.

Preterite Indicative

tive, I had, or did have
tiveste, thou hadst, or didst have
teve, he, she had, or did have
tivemos, we had, etc.
tivestes, you had, etc.
tiveram, they had, etc.

Past Anterior

tivera, I had had
tiveras, thou hadst had
tivera, he, she had had
tivéramos, we had had
tivéreis, you had had
tiveram, they had had

Past Indefinite

tenho tido, I have had

For other persons see Present Indicative and add Past Participles

Pluperfect

tinha tido, I had had

For other persons see Imperfect Indicative and add Past Participle.

Future Indicative

terei, I shall, or will have, or be having
terás, thou shalt, or wilt, etc.
terá, he shall, etc.
teremos, we shall, etc.
teréis, you shall, etc.
terão, they shall, etc.

Conditional

teria, I should, or would have, or be having
terias, thou, etc.
teria, he, she, etc.
teríamos, we, etc.
teríeis, you, etc.
terião, they, etc.

Subjunctive Present

que eu tenha, that I have, do or may have, or be having
que tu tenhas, that thou, etc.
que êle (ela) tenha, that he, she, etc.
que nós tenhamos, that we, etc.
que vós tenhais, that you, etc.
que êles (elas) tenham, that they, etc.

Subjunctive Imperfect

que tivesse, that I had, might have, or be having
que tivesses, that thou, etc.
que tivesse, that he, she, etc.
que tivéssemos, that we, etc.
que tivésseis, that you, etc.
que tivessem, that they, etc.

Subjunctive Future

quando *oi* se tiver, when, or if, I have, or shall have
quando *oi* se tiveres, when thou, etc.
quando *oi* se tiver, when he, she, etc.
quando *oi* se tivermos, when we, etc.
quando *oi* se tiverdes, when you, etc.
quando *oi* se tiverem, when they, etc.

Imperative

tem (tu), have thou
tenha (ele) (ela or Vm.^{es}), let him, her, you, have
tenhamos (nos), let us have or be having
tende (vós), have you
tenham (eles) (elas or Vm.^{as}), let them or you have

The Negative of Imperative 2nd Person Singular and Plural is : **não tenhas ; não tenhais.**

NOTE : All Derivatives of *ter* are conjugated similarly : *as conter, deter, reter, manter, obter, etc.*

CONJUGATION OF SER, ESTAR, TO BE

These important verbs are given in full for reference. The only parts to be learnt at this stage are : Infinitive, Present, Preterite, Future, and the Participles.

<i>ser, to be, to exist</i>	<i>Infinitive</i>	<i>estar, to be, to happen to be</i>	<i>Infinitive</i>
<i>Past Participles</i>		<i>Present Participles</i>	
<i>sido, estado</i>		<i>sendo, estando</i>	

<i>sou or estou</i>	<i>Present Indicative</i>	<i>I am, do be, or am being</i>
<i>ês or estás</i>		<i>thou, etc.</i>
<i>é or está</i>		<i>he, she, etc.</i>
<i>somos or estamos</i>		<i>we, etc.</i>
<i>sois or estais</i>		<i>you, etc.</i>
<i>são or estão</i>		<i>they, etc.</i>

<i>era or estava</i>	<i>Imperfect Indicative</i>	
<i>eras or estavas</i>		
<i>era or estava</i>		
<i>éramos or estávamos</i>		<i>I was, was being, or used to be, etc.</i>
<i>éreis or estáveis</i>		
<i>eram or estavam</i>		

<i>fui or estive</i>	<i>Preterite</i>	
<i>foste or estiveste</i>		
<i>foi or esteve</i>		
<i>fomos or estivemos</i>		<i>I was, or did be, etc.</i>
<i>fostes or estivestes</i>		
<i>foram or estiveram</i>		

<i>tenho sido or tenho estado, I have been</i>	<i>Past Indefinite (or Perfect)</i>
For other persons, see Present Indicative of <i>ter</i> and add the Past Participles.	

<i>tinha sido or tinha estado, I had been</i>	<i>Pluperfect</i>
For other persons see Imperfect of <i>ter</i> and add Past Participles	

<i>fôra or estivera</i>	<i>Past Anterior</i>	
<i>foras or estiveras</i>		
<i>fôra or estivera</i>		
<i>fôramos or estivéramos</i>		<i>I had been, etc.</i>
<i>fôreis or estivéreis</i>		
<i>foram or estiveram</i>		

<i>serei or estarei</i>	<i>Future Indicative</i>	
<i>verás or estarás</i>		
<i>será or estará</i>		
<i>seremos or estaremos</i>		<i>I shall, or will be</i>
<i>sereis or estareis</i>		
<i>serão or estarão</i>		

<i>seria or estaria</i>	<i>Conditional</i>	
<i>serias or estarias</i>		
<i>seria or estaria</i>		
<i>seríamos or estaríamos</i>		<i>I should, or would be</i>
<i>seríeis or estaries</i>		
<i>seriam or estariam</i>		

<i>que eu seja or esteja</i>	<i>Subjunctive Present</i>	
<i>que tu sejas or estejas</i>		
<i>que êle, ela, Vm^{os} seja or esteja</i>		
<i>que nós sejamos or estejamos</i>		
<i>que vós sejais or estejais</i>		
<i>que êles, elas, Vm^{as} sejam or estejam</i>		<i>that I be, do, or may be</i>

Subjunctive Imperfect

<i>que fôsse or estivesse</i>		
<i>que fôsses or estivesse</i>		
<i>que fôsse or estivesse</i>		
<i>que fôssemos or estivéssemos</i>		
<i>que fôsseis or estivésseis</i>		
<i>que fôssem or estivessem</i>		<i>that I were or might be</i>

Subjunctive Future

<i>quando or se fôr or estiver</i>		
<i>quando or se fôres or estiveres</i>		
<i>quando or se fôr or estiver</i>		
<i>quando or se formos or estivermos</i>		<i>when, or if I be or shall be</i>
<i>quando or se fôres or estiverdes</i>		
<i>quando or se forem or estiverem</i>		

Imperative

<i>sê or está tu</i>	<i>be thou</i>
<i>seja or esteja êle, ela, Vm^{os}.</i>	<i>let him, her, you be</i>
<i>sejam or estejamos nós</i>	<i>let us be</i>
<i>sêde or estai vós</i>	<i>be you</i>
<i>sejam or estejam êles, elas, Vm^{as}.</i>	<i>let them, you be</i>

NOTE : The negative of the 2nd person Singular and Plural are :

não sejas, or não estejas *não sejas, or não estejas*

The subjunctive is used for the imperative of 3rd person and polite form of 2nd, and so for *all* Verbs

Usage of SER and ESTAR

The usage of these two verbs presents difficulties to the English learner, but they are of very frequent occurrence and must be mastered at this stage. Those who know Spanish may take comfort in the fact that, on the whole, Portuguese usage is similar.

ESTAR represents a temporary or transitory state
SER represents a fixed or permanent state. Thus
Estou doente, means *I am ill* - now, but not always.
Sou doente, means *I am ill*—a permanent invalid

SER	ESTAR
<i>é claro, it goes without saying that it is clear</i>	<i>está claro, now it is clear (which it was not before)</i>
<i>é morto, he is dead and has been for some time</i>	<i>está morto, he is dead (just now or very recently)</i>
<i>sou cego, I am a blind man (no hope of recovery)</i>	<i>estou cego, I am a blinded man (but I hope to recover)</i>
<i>êle é alegre, he is cheerful (by nature)</i>	<i>êle está alegre, he is merry now (though not necessarily always)</i>
<i>é bom, he is a good man</i>	<i>está bom, he is well (in good health)</i>

SER followed by a past participle indicates the resultant ACTION suffered by the subject : *Eu fui ferido por João, I was hit (wounded) by John.*

ESTAR followed by a past participle indicates the resultant STATE of the subject : *Quando cheguei, estava ferido, When I arrived I was (already) wounded.* The verb *Ficar, to remain, or stay*, is used similarly. *Quando cheguei, ficava ferido.*

NOTE : **ESTAR DE**, *to occupy a position or office*, *Estou de guarda, I am on (keeping) guard.* **ESTAR**, followed by the Present Participle, is the continuous present : *Estou falando, I am speaking* (Also, *one can say, estou a falar.*) **ESTAR PARA**, *to be about to be* : *está para chover, it is about to rain.* **ESTAR POR**, followed by an infinitive, indicates an action that is about to be COMPLETED : *Isto está por fazer, this is to be done, it has almost been done already.*

SER is used to form the passive of verbs.

LESSON 5

Irregular Verbs

HAVING mastered the auxiliaries and obtained a general idea of the principles of the regular verb, you can begin to concentrate on learning verbs from the essential vocabulary in Lesson 9. And you can now also turn back and re-read all the examples and words given in the preceding Lessons. It is inadvisable to begin learning irregular verbs until you have mastered the general principles of articles, nouns, adjectives, numerals, pronouns, regular verbs, and auxiliaries.

Section 1.—FIRST CONJUGATION IN -AR

There are only two verbs—**DAR** and **ESTAR**—in this conjugation which are irregular, but there are a few which are subject to orthographic changes (see page 2665). In the statements which follow, only the irregular parts and those which must be known are given.

DAR, to give

<i>Pres. Indic.</i>	dou, dás, dá, damos, dais, dão
<i>Imp. Indic.</i>	dava, davas, etc. (Regular)
<i>Preterite</i>	dei, deste, deu, demos, destes, deram
<i>Imperative</i>	dá (não des), dê, dêmos, dai (não deis), dêem
<i>Pres. Subj.</i>	dê, dês, dê, dêmos, deis, dêem
<i>Future</i>	darei, darás, etc. (Regular)
<i>Conditional</i>	daria, darias, etc. (Regular)
<i>Participles</i>	dando, dado

FICAR, to remain

<i>Pres. Indic.</i>	fico, ficas, etc. (Regular)
<i>Imp. Indic.</i>	ficava, etc. (Regular)
<i>Preterite</i>	fiquei, ficaste, ficou, ficamos, ficastes, ficaram

Section 2.—SECOND CONJUGATION IN -ER

In the lists which follow, the most important verbs are indicated in heavy type.

ABORRECER, to hate

<i>Pres. Indic.</i>	aborreço, aborreces, etc. (Regular)
<i>Pres. Subj.</i>	aborreça, aborreças, etc.

See page 2665, orthographic changes.

The following are conjugated like **aborrecer**: **vencer**, **pertencer**, **conhecer**, **convencer**, **esquecer**, **nascer**, **obedecer**, **torcer**, **retorcer**.

CABER, to be contained

<i>Pres. Indic.</i>	caibo, cabes, cabe, etc.
<i>Preterite</i>	coube, coubeste, coube, coubemos, coubestes, couberam
<i>Pres. Subj.</i>	caiba, caibas, etc.
<i>Imp. Subj.</i>	coubesse, coubesses, etc.

CRER, to believe

<i>Pres. Indic.</i>	creio, crês, crê, cremos, credes, crêem
<i>Pres. Subj.</i>	creia, creias, etc.
<i>Imperative</i>	crê (não creias), creia, creiamos, crede (não creias), creiam. Other tenses and persons not given here are regular.

DIZER, to say

<i>Pres. Indic.</i>	digo, dizes, diz, dizemos, dizeis, dizem
<i>Imp. Indic.</i>	dizia, etc.
<i>Preterite</i>	disse, disseste, disse, dissemos, dissestes, disseram
<i>Past Anterior</i>	dissera, dissesas, etc.
<i>Future</i>	direi, dirás, etc. (i.e. short form of the regular conjugation)

<i>Conditional</i>	diria, dirias, etc. (shortened from <i>dizeria</i> , etc.)
<i>Subj. Pres.</i>	diga, digas, diga, digamos, digais, digam
<i>Imperative</i>	dize tu (não digas tu), diga, digamos
	dizei (não digais), digam
<i>Imp. Subj.</i>	disseste, dissesse, etc.
<i>Fut. Subj.</i>	disser, dissesse, etc.
<i>Participles</i>	<i>Pres.</i> dizendo, <i>Past</i> dito

FLEGGER, to elect

<i>Pres. Indic.</i>	elejo, eleges, elege, etc.
<i>Pres. Subj.</i>	eleja, elejas, etc.
<i>Imperfect</i>	elegia, etc.
<i>Imperative</i>	elege (não elejas tu), eleja, elejamos, eleget (não elejais), elejam

NOTE: The "g" always becomes "j" before "o," "a," "ão" or "am."

ESQUECER, to forget See **aborrecer**.**FAZER**, to do, make

<i>Pres. Indic.</i>	faço, fazes, faz, fazemos, fazeis, fazem
<i>Imperfect</i>	fazia, etc.
<i>Preterite</i>	fiz, fizeste, fêz, fizemos, fizestes, fizeram
<i>Past Anterior</i>	fizera, fizesas, etc.
<i>Pres. Subj.</i>	faça, faças, etc.
<i>Imperative</i>	faze (tu) (não faças), faça, façamos, fazei (não façais), façam
<i>Imp. Subj.</i>	fizesse, fizesseis, etc.
<i>Fut. Subj.</i>	fizer, fizeres, etc.
<i>Fut. Indic.</i>	farei, farás, fará, etc. Short for: <i>fazerei</i> , etc.)

Conditional *faria, farias, etc. (Short for: fazeiria, etc.)*

Participles *Pres.* fazendo, *Past* feito

HAVER

Only a few parts of this verb will be found necessary, and they are given in page 2667

JAZIR, to lie

Impersonal verb. Used in the 3rd person singular and plural, i.e. *jaz* and *jazia*; *jazem*, *jaziam*. On tombstones: *aqui jaz*. here lies.

LER, to read. See *crer*.

NASCER, to be born. See *aborrecer*.

OBEDECER, to obey See *aborrecer*.

PERDER, to lose

<i>Pres. Indic.</i>	perco, perdes, perde, etc.
<i>Pres. Subj.</i>	perca, percas, etc.
<i>Imperative</i>	perde (não percas), perca, percamos, perdei (não percais), percam. <i>Perder</i> is otherwise regular but changes "d" into "c" before "o," or "a," "ão," or "am"

PODER, to be able

<i>Pres. Indic.</i>	posso, podes, pode, etc.
<i>Preterite</i>	pude, pudeste, pôde, pudemos, pudestes, puderam
<i>Pres. Subj.</i>	possa, possas, etc.
<i>Participles</i>	<i>Past</i> : podido, <i>Pres.</i> : podendo

REMARK: In all tenses not given, the conjugation is regular.

PRAZER, to please Impersonal verb

<i>Pres. Indic.</i>	praz
<i>Preterite</i>	prouve
<i>Pres. Subj.</i>	praza
<i>Participles</i>	<i>Pres.</i> : prazendo; <i>Past</i> : prazido

QUERER, to wish, like, want

<i>Pres. Indic.</i>	quero, queres, quere or quer, queremos, quereis, querem
<i>Pres. Subj.</i>	queira, queiras, queira, queiramos, queirais, queiram

<i>Fut. Subj.</i>	quiser, quiseses, etc.
<i>Preterite</i>	quis, quiseeste, quis, quisemos, quiseestes, quiseram
<i>Imp. Subj.</i>	quisesse, quisessees, quisesse, etc.
<i>Imperative</i>	quere (não queiras), queira, queiramos, querei (não queirais), queiram
<i>Participles</i>	<i>Past</i> querido; <i>Pres.</i> querendo
<i>REQUERER</i>	ask, solicit
<i>Pres. Indic.</i>	requero (not requero), requeres, requer, etc.
<i>Pres. Subj.</i>	requena, requeras, etc.
For other tenses and persons see <i>comer</i> (regular)	

<i>SABER, to know</i>	
<i>Pres. Indic.</i>	sei, sabes, sabe, etc.
<i>Pres. Subj.</i>	saiba, saibas, etc.
<i>Imperative</i>	sabe (não saibas), saiba, saibamos, sabei (não saibais), saibam
<i>Preterite</i>	soube, soubeste, soube, etc.
<i>Imp. Subj.</i>	souhesse, souhessees, etc.
<i>Fut. Subj.</i>	souber, souberes, etc.
<i>Participles</i>	<i>Past</i> sabido; <i>Pres.</i> sabendo
<i>SER</i>	See page 2668
<i>TER</i>	See page 2667.

<i>TRAZER, to bring, fetch</i>	
<i>Pres. Indic.</i>	trago, trazes, traz, etc.
<i>Pres. Subj.</i>	traga, tragas, etc.
<i>Imp. Indic.</i>	trazia, etc.
<i>Preterite</i>	trouxe, trouxeste, trouxe, etc.
<i>Imp. Subj.</i>	trouxesse, etc.
<i>Imperative</i>	traze (não tragas), traga, tragamos, trazei (não tragais), tragam
<i>Fut. Subj.</i>	se trouxer, trouxeres, etc.
<i>Fut. Indic.</i>	trarei (short of trazeirei), trará
<i>Condit. Pres.</i>	traria (short of trazeiria), trarias

<i>VALER, to be worth</i>	
<i>Pres. Indic.</i>	valho, vales (val), etc.
<i>Pres. Subj.</i>	valha, valhas, etc.

Valer changes "l" into "lh" when followed by "a," "o," "am." In all other tenses and persons, it is regular.

VENCER, to conquer See *aborrecer*.

<i>VIR, to see</i>	
<i>Pres. Indic.</i>	vejo, vês, vê, vemos, vedes, vêem
<i>Pres. Subj.</i>	veja, vejas, etc.
<i>Imperative</i>	vê tu (não vejas), veja, vejamos, vêde (não vejaís), vejam
<i>Preterite</i>	vi, viste, viu, vimos, visteis, viram
<i>Participles</i>	<i>Past</i> visto; <i>Pres.</i> vendo (See <i>vir</i> , to come, next column, and avoid confusion of forms)

Section 3.—THIRD CONJUGATION IN -IR

<i>ABOLIR, to abolish</i>	
<i>Pres. Indic.</i>	abulo, aboles, aholé, etc.
<i>Pres. Subj.</i>	abula, abulas, abula, abulamos, abulais, abulam
<i>Imperative</i>	ahole tu (não abulas), abula, abulamos, aholi (não abulaís), abulam

REMARK: Verbs like *abolir*, *demolir*, *cobrir*, *dormir*, change the "o" into "u" before "a," "o," "am," in conjugation. Otherwise they are regular

<i>ACUDIR, to help</i>	
<i>Pres. Indic.</i>	acudo, acodes, acode, acudimos, acudis, acodem
<i>Pres. Subj.</i>	acuda, acudas, etc.
<i>Imperative</i>	acode tu (não acudas), acuda, etc.

REMARK: *acudir*, changes "u" into "o" before "e" in the conjugation; otherwise it is regular.

(SIMILAR ARE *descobrir*, *encobrir*, *subir*, *bulir*, *construir*, *engulir*, *consumir*, *cuspir*, *destruir*, *fugir*, *sacudir*, *estruir*, *surgir*, *sumir*, *tossir*. But not the verbs *presumir* and *resumir*, which are regular.)

<i>ADHERIR, to adhere</i>	
<i>Pres. Indic.</i>	adiro, aderos, adere, etc.
<i>Pres. Subj.</i>	adira, adiras, adira, etc.
<i>Imperative</i>	adere (não adiras), adira, adiramos, aderi (não adiraís), adiram

(SIMILARLY CONJUGATED: *inferir*, *inserir*, *advertir*, *assentir*, *aferir*, *conferir*, *deferir*, *diferir*, *digerir*, *despir*, *divertir*, *encrir*, *servir*, *ferir*, *transferir*, *gerir*, *mentir*, *consentir*, *sentir*, *ressentir*, *vestir*, and their derivatives; also all verbs ending in "-pelir," "-petir," as: *repelir*, *compelir*, *expelir*, *impelir*, *repetir*, *competir*.)

<i>CAIR, to fall</i>	
<i>Pres. Indic.</i>	caio, cals, cal, etc.
<i>Pres. Subj.</i>	caia, caias, etc.
<i>Imperative</i>	cai (tu não caias), caia, caiamos, cai (não caiais), caiam. Other tenses are regular.

<i>DORMIR, to sleep</i>	
<i>Pres. Indic.</i>	durmo, I sleep
<i>Imperative</i>	durma, sleep

<i>IR, to go</i>	
<i>Pres. Indic.</i>	vou, vais, vai, vamos, ides, vão
<i>Imperfect</i>	ia, ias, etc.
<i>Preterite</i>	fui, foste, foi, fomos, fostes, foram
<i>Past Anterior</i>	fôra, foras, fôra, etc.
<i>Pres. Subj.</i>	vá, vás, vá, vamos, vades, vão
<i>Imp. Subj.</i>	fôsse, fôsses, fôsse, fôssemos, fôsseis, fôssem
<i>Fut. Subj.</i>	fôr, fores, fôr, formos, fordes, forem
<i>Fut. Indic.</i>	irei, irás, irá, etc.
<i>Condit. Pres.</i>	iria, irias, iria, etc.
<i>Imperative</i>	vai (não vás), vá, vamos, ide (não vades), vão

<i>Participles</i>	<i>Past</i> ido; <i>Pres</i> indo
<i>IUZIR, to shine</i>	
<i>Pres. Indic.</i>	luzo, luzes, luz. All other tenses are regular. The only "irregularity" in this verb is that in 3rd pers. it is written <i>luz</i> instead of "luzc." <i>Conduzir</i> , <i>reduzir</i> , <i>soduzir</i> , and all in "-uzir" are so conjugated.

<i>MEDIR, to measure</i>	
<i>Pres. Indic.</i>	meço, medes, mede, etc.
<i>Pres. Subj.</i>	meça, meças, etc.
<i>Imperative</i>	mede (não meças), meçam

The "d" becomes "ç" before "o," "a," "am" in the terminations. So are: *pedir*, and derivatives. Also see *ouvir*.

<i>OUVIR, to hear</i>	
<i>Pres. Indic.</i>	ouço, ouves, etc.
<i>Pres. Subj.</i>	ouça, ouças, etc.

REMARK: The "v" becomes "ç" for same reason as the "d" in "medir," which see.

<i>PEDIR, to ask</i>	
See <i>medir</i> and <i>ouvir</i> .	
<i>Pres. Indic.</i>	Peço

<i>RIR, to laugh</i>	
<i>Pres. Indic.</i>	rio, ris, ri, rimos, rides, riem
<i>Imperative</i>	ri (não riaís), ria, riamos, ride (não riaís), riam

REMARK: All other persons and tenses follow the regular 3rd conjugation

<i>SAIR, to go out</i>	
See <i>cair</i> : Saio, saís, sai, etc.	

<i>VESTIR, to dress</i>	
<i>Pres. Indic.</i>	visto, vestes, veste, etc.
<i>Imperative</i>	vista

<i>VIR, to come</i>	
<i>Pres. Indic.</i>	venho, vens, vem, vimos, vindes, vêm
<i>Pres. Subj.</i>	venha, venhas, etc.
<i>Imp. Indic.</i>	vinha, vinhas, etc.
<i>Preterite</i>	vim, viste, veio, viemos, viestes, vieram

NOTE: Do not confuse this tense with the pret. of "ver," to see (in left column).

<i>Past Anterior</i>	viera, vieras, etc.
<i>Imp. Subj.</i>	viesses, viessees, viesse, etc.
<i>Imperative</i>	vem (não venhas), venha, venhamos, vinde (não venhaís), venham

Fut. Subj. vier, vieres, vier, etc.
Participles Past : vindo ; Pres. : vindo
 (N.B. Both the same)

NOTE : It will be noticed that, in the affirmative, the imperative 2nd pers. sing. and 2nd pers. plural of all verbs is formed by taking the pres. indic. 2nd sing. and 2nd plur. and dropping the final "s," the accentuation remaining the same.

CONJUGATION OF THE VERB PÔR, to put or to place

This is the only verb ending in -or (from Latin *ponere* : it survives from the obsolete form *pôer*). As it is of very frequent occurrence we give it in full, the less important parts being in light type.

Infinitive pôr, to put, place, lay, or set
Pres. Participle pondo, putting
Past Participle pôsto, put, placed, etc.

Present	<p>{ ponho pões põe pomos pondes põem</p>	Conditional	<p>{ poria - ias - ia - iamos - ieis - iam</p>
Imperfect	<p>{ punha punhas punha punhamos punheis punham</p>	Imperative	<p>{ põe (não ponhas) ponha ponhamos ponde (vós) (não ponhais) ponham</p>
Preterite	<p>{ puz pozeste pôz pozêmos pozêstes pozeram</p>	Subjunctive	<p>{ ponha ponhas ponha ponhamos ponhaes ponham</p>

<i>Pluperfect</i>	{	pusera	<i>Past Anterior</i>	{	pusesse
		puseras		{	pusesse
		pusera		{	pusesse
		puseramos		{	puséssemos
		puséreis		{	pusésseis
	{	puséram		{	puséssem
<i>Future</i>	{	porei	<i>Future</i>	{	puser
		porás		{	puseres
		porá		{	puser
		poremos		{	pusermos
		poreis		{	puserdes
		porão		{	puserem
<i>Pers Inf</i>	{	pôr eu			
		pores tu			
		pôr ele, etc.			
		pormos nós			
		pordes vós			
		porem eles			

Conhecer, Saber, and Poder

The English student must note carefully the meaning of these verbs, which are used to translate "can"; the Portuguese equivalents are more precise and restricted in meaning than the English. *Saber* is used for knowledge of a fact or subject which demands intellectual ability or concentration.

O Sr. sabe francês? You know French?

Conhecer is used for superficial knowledge or mere acquaintanceship.

Conhece o francês? You know the Frenchman?
 (*Saber* is equivalent to the French *savoir*, and *conhecer* to *connaître*.)

Poder is used for physical ability.

Eu não sei ler, I cannot read (i.e. do not know how to). Eu não posso ler, I cannot read (because I am blind)

LESSON 6

Participles and Special Uses of Verbs

IN this miscellaneous Lesson, though it is complementary to Nos. 4 and 5 that have dealt with Auxiliary, Regular, and Irregular Verbs, we study briefly the Past Participles, Negative, Interrogative, and Passive, of Verbs, with notes on Reflexive and Impersonal Verbs and Idiomatic Usage.

Past Participles

1. When the past participle is used with *ter* and *haver* to form compound tenses, denoting an action or operation, it is invariable.

Eles têm falado ao homem, They have spoken to the man.
 Ela tem falado ao homem, She has spoken to the man.

2. But when the past participle is used as an adjective, it agrees in gender and number with the nominative of the verb :

Chegámos cansados, We arrived tired.

3. It also agrees with the nominative when used with *ser* and *estar* to indicate a state or condition :

Esta obra está acabada, This work is completed

Verbs with Two Past Participles— (For Reference)

There is a considerable number of verbs which have two past participles, one regular, the other irregular. The regular form is generally verbal, and the irregular adjectival. The following should be memorised :

ACEITAR, to accept, **PAST PARTICLES** *aceitado*, *acetto*.
ENTREGAR, to deliver, *entregado*, *entregue*.
FIXAR, to fix, *fixado*, *fixo*.
GANHAR, to win, earn, *ganhado*, *ganho*.
GASTAR, to spend, *gastado*, *gasto*.
IGNORAR, not to know, *ignorado*, *ignoto*.
JUNTAR, to join, *juntado*, *junto*.
MISTURAR, to mix, *misturado*, *misto*.
PAGAR, to pay, *pagado*, *pago*.
SUSPEITAR, to suspect, *suspeitado*, *suspeito*.
ABSOLVER, to absolve, *absolvido*, *absolto*.
CORROMPER, to corrupt, *corrompido*, *corruto*.
ELEGER, to elect, *elegido*, *eileto*.
ESCREVER, to write, *escrevido*, *escrito*.
MORRER, to die, *morrido*, *morto*.
PRENDER, to arrest, *prendido*, *prêso*.
ROMPER, to break, *tear*, *rompido*, *rôto*.
SUSPENDER, to suspend, *suspendido*, *suspenso*.
TORCER, to twist, *torcido*, *tôrto*.

ABRIR, to open, *abrido, aberto*.
COBRIR, to cover, *cobrido, coberto*.
CONCLUIR, to conclude, *concluido, concluso*.
EXTINGUIR, to extinguish, *extinguído, extinto*.
EXTRAIR, to extract, *extraído, extracto*.
FRIGIR, to fry, *frigido, frito*.
IMPRIMIR, to impress, print, *imprimido, impresso*.
INCLUIR, to include, *incluido, incluso*.
INSTRUIR, to instruct, *instruído, instruto*.
OPRIMIR, to oppress, *oprimido, opresso*.

NOTE: The most frequently occurring form in the majority of the above is the irregular or adjectival

The Negative of Verbs

Não is the ordinary word for *no* and *not*. It comes immediately before the verb, except when a reflexive pronoun is used. *Eu não falo, I do not speak. Eu não me lavo, I do not wash myself*. In compound tenses *não* stands before the auxiliary: *Eu não tenho falado, I have not spoken*.

To Use the Verb Interrogatively - Intonation

The simplest way of putting a question in *speaking* is to make a positive (or negative) statement, with an intonation which indicates a query. This sometimes works in English, but not always, because English grammar and construction are very much vaguer than Portuguese. Every person who knows English, knows that in the following sentence

YOU SPEAK ENGLISH

the speaker can change the whole sense by emphasis and intonation, while it is possible to appreciate the change of meaning by change of emphasis on the three words thus—

YOU SPEAK ENGLISH

YOU SPEAK ENGLISH

YOU SPEAK ENGLISH

that is, you may or may not write it but there is also the question of SPEAKING it.

The Passive of Verbs

The passive is formed by using the auxiliary **SER** with the past participle of the verb of which the passive is required.

Thus *Eu sou chamado, I am called* (not named, which would be *Eu chamo-me*) **SER CHAMADO**, to be called.

Pres. Indic.

Eu sou chamado,-a
tu és chamado,-a
êle é chamado
ela é chamada
nós somos chamados,-as
vós sois chamados,-as
êles são chamados
elas são chamadas

Past Definite or Preterite

Eu fui chamado,-a

Future

Eu serei chamado,-a

—and so on throughout the verb. This is always quite regular, and easy to learn.

The reflexive (*see* below) is frequently used to express the passive, especially to avoid ambiguity:

Eu fui banhado, I was bathed (by somebody else)

Eu banhei-me (or *eu me banhei*), *I had a bath, I bathed myself*

Reflexive Verbs

A verb is called reflexive

(a) when the action is both performed and suffered by the subject, as *banharse*, to *bathe* and
 (b) when this is not necessarily so, but the genius of the Portuguese language demands that reflexive pronouns be used in addition to the personal pronouns,

as *atrever-se*, to *dare*, *queixar-se*, to *complain*, *jactar-se*, to *boast*, *arrepender-se*, to *be sorry*

—and these are essentially reflexive verbs. (The word *mesmo*, *same*, *self*, must not be confused with the reflexive.)

	LAVAR-SE , to wash oneself	
<i>Lavando-me</i> , washing myself	<i>Tendo-me-lavado</i>	
<i>Eu lavo-me</i> , I wash myself	<i>nós lavámo-nos</i>	
<i>tu lavas-te</i>	<i>vós lavais-vos</i>	
<i>êle lava-se</i>	<i>êles lavam-se</i>	
<i>ela lava-se</i>	<i>elas lavam-se</i>	
<i>Imp</i> - <i>Eu laváva-me</i> ,	<i>Past Def</i> <i>Eu lavei-me</i> ,	
<i>I washed myself</i>	<i>I washed myself</i>	
<i>Future</i>	<i>EU HEI-DE ME LAVAR</i> , or <i>LAVAR-</i>	
	<i>ME-HEI</i> , I shall wash myself	
<i>Conditional</i>	<i>EU HAVIA DE ME LAVAR</i> , or <i>LAVAR-</i>	
	<i>ME-IA</i> , I should wash myself	
<i>Imperative</i>	<i>LAVA-TE</i> , <i>LAVA-SE</i> , <i>Não te laves</i> , <i>não</i>	
	<i>se lave</i>	
<i>Pres. Subj.</i>	<i>Que eu me lave</i> , <i>que tu te laves</i> , <i>que êle</i>	
	<i>se lave</i> , etc	

NOTE: Of the above, the future and conditional demand particular attention, as experience shows that English learners find them a little difficult.

Impersonal Verbs

The following frequently occurring impersonal verbs should be memorised:

<i>acontece</i> , it happens	<i>chove</i> , it rains (from <i>chover</i>)
<i>troveja</i> , it thunders	<i>neva</i> , it snows (nevar)
<i>gela</i> , it freezes	<i>degela</i> , it thaws
<i>relampeja</i> , it lightens	<i>venta</i> , it blows
<i>escurce</i> , it grows dark	<i>resulta</i> (que), it results (that)
<i>parece</i> (que), it appears	<i>convém</i> (que), it is convenient (that)
(that)	

Certain impersonal phrases of necessity, uncertainty, feeling or desire, when followed by *que*, *that*, take the subjunctive in the dependent clause which follows them, as:

é lástima que, it is a pity that
é indispensável que, it is indispensable that
é vergonha que, it is a shame that
é justo que, it is right that
pesa-me que, it grieves me that
praz-me que, it pleases me that
é preciso que, it is necessary that

Note also the following useful impersonal phrases:

é evidente, evident, (im)possível, im-possible, *verdade*, true, *provável*, certo, probable, *certain*, *há dúvida*, there is doubt, *não há dúvida*, there is no doubt, *há muito tempo*, *há um ano*, a long time ago, a year ago,

and the following phrases which deal with the weather (not so interesting a subject to Portuguese and Brazilians as to English people):

Está (or *faz*) *calor*, it is hot
 " " *frio*, cold
 " " *sol*, sunshine
 " " *névoa*, foggy

And see page 2667 for **Haver** used impersonally meaning *there to be*.

Idiomatic Usage of Certain Verbs

For idioms see also page 2677. There are some very common idiomatic phrases made up with verbs which the student has already met in the preceding pages, and of these the most frequently occurring are :

DAR horas, *to strike* (of a clock)
 dar ocasião, *to provide an opportunity*
 dar um passeio, *to go for a walk*
 dar os bons dias, as boas noites, *to bid good day, good night*

dar os parabéns, *to congratulate*
 dar nos olhos, *to be quite evident*
 dar para, *to look upon* (of, say, a window which looks on the street : esta janela dá para a rua).

FAZER calor, frio, vento, bom tempo, mau tempo, *to be hot, cold, windy, good weather, bad weather*
 fazer anos, *to have a birthday*
 fazer fazer algo, *to have something done*

fazer a barba, *to shave*
 fazer gala de, *to boast of*
 fazer compras, *to make purchases* (go shopping)
 fazer um discurso, *to make a speech*
 fazer-se falta, *to miss* (faz-me muito falta, *I miss greatly*)

fazer de bôbo, *to make an ass* (fool) of one's self
 está a fazer, *it is being done*
 está por fazer, *it is to be done*
 fazer-se velho, *to become old*

IR-SE, *to go away*
 Ir-se embora, *to get out of*
 Ir a cavalo, *to go on horseback*
 Ir a pé, *to go on foot*
 Ir ter com, *to go and call on somebody*
 Como vai ? *How are you ?* (familiar). (Literally, *How goes it with you ?*)

Vai-lhe bem, *it suits you well*
 Vamos embora, *let us go out, away*

NOTE The above are useful phrases and should be known

READING EXERCISE

You have now become acquainted with the greatest difficulties of Portuguese grammar, and if you have learnt a few hundred words you should be able to make the sense of easy, straightforward prose. Here is an excellent example - an extract from the book of Luke, with an interlinear literal translation. Read it first with the translation, then cover the English and try to read the Portuguese without this help. When it is well understood, read the Portuguese several times, until all the verb forms and words are impressed on the memory

A PARABOLA (Luke XIV. 12-33)

12 E dizia também ao que o tinha convidado :
 And he said also to the one who had invited him
 " Quando deres um jantar ou uma ceia, não chames
 " When you give a dinner or a supper, do not invite
 os teus amigos, nem os teus irmãos, nem os teus
 thy friends or your brothers, or your
 parentes nem vizinhos ricos, para que não suceda que
 relations or rich neighbours, lest they invite you in their
 também eles te tornem a convidar, e te seja isso
 turn, and give back again what they have received
 recompensado.
 from you

13 Mas, quando fizeres convite, chama os pobres,
 But, when you give a feast, invite the poor,
 aleijados, mancos e cegos ;
 the crippled (the lame), one-armed and blind ;

14 E serás bemaventurado ; porque eles não têm
 And you will be happy because they cannot
 com que recompensar : mas recompensado te será
 repay you similarly ; for that will be repaid at the
 ne ressurreição dos justos."
 resurrection of the just."

15 E, ouvindo isto um dos que estavam com êle à
 And one of those who were at table with him, having
 mesa, disse-lhe : " Bemaventurado o que comer pão
 heard these words, said to him " Happy is he who
 no reino de Deus."
 shall eat bread in the kingdom of God "

16 Porém êle lhe disse : " Um certo homem fez uma
 But he said to him : " A certain man gave a
 grande ceia, e convidou a muitos.
 great feast (supper) and invited many (people)

17 E à hora da ceia mandou o seu servo dizer
 And at the hour of the feast he sent his servant
 aos convidados : Vinde que já tudo está preparado.
 to say to the guests Come for all is prepared

18 E todos à uma começaram a escusar-se. Disse-
 And all as one began to make excuses. Said
 lhe o primeiro : Comprei um campo, e importa ir
 the first to him : I have bought a field and must go to
 vê-lo ; rogo-te que me hajas por excusado.
 see it : I pray of you to excuse me

19 E outro disse : comprei cinco juntas de bois.
 The other said : I have bought five pairs of oxen
 e vou experimentá-los ; rogo-te que me hajas por
 and I am going to test them ; I pray of you to
 excusado.
 excuse me

20 E outro disse : Casei e portanto não posso ir.
 And another said : I have just married and for that
 (reason) I cannot go

21 E, voltando aquêle servo, anunciou estas coisas
 The servant having returned announced these things
 ao seu senhor. Então o pai da família, indignado,
 to his master. Then the father of the family, angry,
 disse ao seu servo : Sai depressa pelas ruas e
 said to his servant : Go quickly into the streets and
 bairros da cidade, e traze aqui os pobres e aleijados,
 districts of the city, and bring here the poor, the
 e mancos e cegos.
 crippled (the lame), one-armed and blind

22 E disse o servo : Senhor, feito está como
 And the servant said : Master (Lord), it has been
 mandaste, e ainda há lugar.
 done as you have ordered, and there is yet place

23 E disse o senhor ao servo : Sai pelos caminhos
 And the master said to the servant : Go into the
 e valados, e força-os a entrar, para que a minha
 roads and along the hedges, and (those whom you find),
 casa se encha.
 press them to enter so that my house may be full.

24 Porque eu vos digo que nenhum daqueles varões
 Because I tell you that not one of these men
 que foram convidados provará a minha ceia."
 who have been invited shall taste of my supper."

25 Ora ia com êle uma grande multidão e voltando-se
 Now a great crowd journeyed with him, and he
 disse-lhe :
 turned and said to them

26 " Se alguém vier a mim, e não aborrecer a seu
 " If someone comes to me and hates not his
 pai e mãe, e mulher e filhos, e irmãos e irmãs,
 father and mother, his wife and children, his brothers
 e ainda a sua própria vida, não pode ser meu
 and sisters and even his own life, he cannot be my
 discípulo.

27 E qualquer que não levar a sua cruz e não vier
 And whoever bears not his cross and follows
 após mim não pode ser meu discípulo.
 me not, cannot be my disciple

28 Pois qual de vós, querendo edificar uma torre,
 Which of you then, if he wishes to build a tower,
 não se assenta primeiro a fazer as contas dos gastos,
 does not sit down beforehand to calculate the expense
 para ver se tem com que acabar ?
 and whether he has the means to finish it ?

29 Para que não aconteça que, depois de haver pôsto
Lest after having put down the foundations of the
os alicerces, e não a podendo acabar, todos os que
buildings, he may not be able to complete it, and all who
virem comecem a escarnecer d'êlo.
see him shall begin to mock him.

30 Dizendo: Este homem começou a edificar e não
Saying: This man has begun to build and has not
pôde acabar.
been able to finish

31 Ou qual é o rei que, indo à guerra a pelejar
Or what king, if he is going to make war against
contra outro rei, não se assenta primeiro a tomar
another king, does not first sit down to deliberate
conselho sobre se com dez mil pode sair ao encontro

whether he is able with 10,000 men to face an
de que vem contra êle com vinte mil?
enemy who is coming to attack him with 20,000?

32 Doutra maneira, estando o outro ainda longe.
If he cannot, while the other is still far away,
manda embaixadores, e pede condições de paz.
he sends ambassadors and asks conditions of peace.

33 Assim pois, qualquer de vós, que não renuncia
So then, whoever amongst you does not renounce
a tudo quanto tem, não pode ser meu discípulo.
all that he possesses, cannot be my disciple.¹

¹ Note that the English translation is literal and does
not follow exactly the version to which the reader may
be accustomed.

LESSON 7

Adverbs, Prepositions, Conjunctions

An adverb is a word used to qualify a verb,
an adjective or another adverb.

In Portuguese, adverbs are formed by
adding **-mente** to the feminine form of an adjective.
If the adjective has the same form for both
genders, then **-mente** is added to that form. It
corresponds to the English **-ly**.

justo (masculine), just, exact
justa (feminine)
justamente, exactly

feliz, happy, has the same form in the
feminine, so the adverb is **felizmente**.

Comparison

The comparative of adverbs is formed by
placing the word **mais**, more, before the positive:
mais felizmente, more happily. And **o mais**,
most, is used to form the superlative: **o mais**
felizmente, most happily.

If adverbs follow one another, only the last
takes the ending **-mente**:

Falarei leal, sincera e francamente, I shall speak
loyally, sincerely and frankly

Nota: The comparative of bem, well, is **mais bem**
or **melhor**, and of mal, badly, is **mais mal** or **pior**.
Menos, less, is similarly used before these and other
adverbs. Menos felizmente, less happily

In Portuguese, the adjective is often used
where an adverb would be grammatically more
correct:

Falar alto, baixo, to speak loudly, low
Andar direito, to walk straight on
Ir direito a, to go quickly
Ir (andar) ligeiro, to go quickly
vender caro e comprar barato, to sell dear and buy
cheap
custar caro, to cost dear (ly)

Tão and quanto correspond to the pronouns
tanto and quanto (see page 2663). Eu sou tão
rico que o Sr., I am as rich as you.

LIST OF USEFUL ADVERBS

PLACE. AQUI, cá, here; ali, ali, lá, there; atrás,
de trás, behind; adiante, in front; dentro, within;
fora, outside; acima, arriba, above, up; abaixo,
debaixo, down, below; aquém, além, on this, that side;
perto, cerca, near; longe, far; embora, away, out of

TIME Hoje, to-day; ontem, yesterday; ante-
ontem, day before yesterday; amanhã, to-morrow;
depois de amanhã, day after to-morrow; sempre, always;
nunca, never; depois, after; antes, sooner; tarde,
late; então, then; agora, now (also ora); logo, soon;
presently; já, already; ainda, still, yet; a miúdo
often.

MANNER Bem, well; mal, badly; melhor,
better; pior, worse; à parte, separately; antes,
rather; sequer, at least; assim, so.

QUANTITY Tão, tanto, so, so much, muito
(pronounce muito), much, mais, more, o mais,
most; pouco, little; menos, less; o menos, least;
demais, demasiado, too much, too (before an adjective);
bastante, enough; quasi, almost; apenas, scarcely;
quão, quanto, how, how much; quanto mais, . . . tanto
mais, the more . . . the more; só, somente, only; nada,
nothing

AFFIRMATION, NEGATION, DOUBT. Sim,
si; não, no, not; ainda, yet; até, even, until;
nem, not; já não, no more; acaso, talvez, quiçá,
perhaps.

All the above are of frequent occurrence, and
should be memorised.

PREPOSITIONS

A preposition is a word placed before a noun
or pronoun to show in what relation the person
or thing denoted stands to something else.

The most frequently occurring prepositions
in Portuguese are:

a, to, at	ante, before	após, after
cerca, about	com, with	contra, against
de, of	desde, from	em, in
entre, between	para, to	por, by
sob, under	sobre, over	trás, behind

A few adverbs are used as prepositions and
of these the most important are:

conforme, according to	mediante, by means of
excepto, except	salvo, save
obstante, notwithstanding	segundo, following, accord-
durante, during	ing to

Prepositions are **invariable**.

A. This is the most frequently occurring
preposition, and it means both **to** (motion) and
at (stationary).

In Portuguese, **a** is used before a direct object
when this direct object is a person, and it is
used before the direct object noun and pronoun.

Eu amos a Deus, I love God. Ele matou ao irmão, he killed the brother. Ele não entende a mim, he does not understand me.

With the article, it indicates at :

à porta, at the door, à mesa, at table, a cinco quilômetros de aqui, at five kilometres from here.

It also indicates, time, instrument, and measure :

às seis horas, at six o'clock, pintado a óleo, painted in oil, morrer à fome, to die of hunger

Note the phrases a pé, on foot, a cavalo, on horseback, and a portuguesa, in Portuguese fashion, pouco a pouco, little by little, dia a dia, day by day, dois a dois, two by two.

And note : *estar a*, to be about to, as in *estar a morrer*, to be about to die, *estar a chegar*, to be about to arrive.

DE. This is also very common, and perhaps the commonest usage is to indicate ownership or possession :

A maçã do rapaz, the boy's apple, o chapêu do pai, the father's hat. Note also, *ter de*, *haver de*, to have to, or to be obliged to. *De dia*, *de noite*, by day, night.

EM. Meaning in or on, used thus :

Em Londres, in London, na Inglaterra, in England, em casa, at home, na casa, in the house, na mesa, on the table. No domingo, on Sunday. No dia 1^o de Janeiro, on the 1st January.

PARA. Indicates direction, aim.

Parti para Portugal, I left for Portugal. Para a direita, to the right. Note *ser para*, to be fit for, as in *este homem é para pouco*, this man is fit for little.

POR. Varieties of usages :

Ir por terra, por mar, to go by land, by sea. Por mim, for my part. Por isso, for that reason. Ficar por acabar, to remain unfinished. Por Deus, for God's sake. Por cima (de), por baixo (de), por dentro (de), above, below, within. Por aqui, this way, por ali, that way.

And note, *porque*, why, because. *Por escrito*, in writing.

COM.

Pão com manteiga, bread and butter. Um saco com maçãs, a sack of apples. Ir com pressa, to go in a hurry.

The above words and phrases should be memorised, as they are all necessary. The usage of *prepositions*, especially *a* and *de*, is not easy, and can be learnt only by experience. The student is advised when reading Portuguese to make a note of the preposition used after certain verbs, and adjectives, and to memorise it.

For example, *preguntar a*, to ask of.

CONJUNCTIONS

Conjunctions are words used for connecting either words or sentences. They are invariable, and their usage rarely differs from the corresponding usage in English.

Memorise the following list :

<i>é, and</i>	<i>se, if</i>
<i>também, also</i>	<i>porque, because</i>
<i>nem, nor</i>	<i>que, that</i>
<i>como, as</i>	<i>quando, when</i>
<i>ou, or</i>	<i>não só, not only</i>
<i>mas, but</i>	<i>nem sequer, not even</i>
<i>porém, yet</i>	<i>tão pouco, no more</i>
<i>todavia, however, yet</i>	<i>ou . . . ou, either . . . or</i>
<i>logo, pois, then,</i>	<i>nem . . . nem, neither . . . nor</i>
<i>consequently</i>	<i>quer . . . quer, whether . . . or</i>
<i>mais (do) que, more than</i>	<i>apesar de, in spite of</i>
<i>menos (do) que, less than</i>	<i>senão, otherwise</i>
<i>assim . . . como, such . . . as</i>	<i>antes, rather</i>
<i>tão . . . que, so that</i>	<i>sem que, except</i>
<i>a menos de, que . . . unless</i>	<i>para que, in order to</i>
<i>ainda que, even if</i>	<i>suposto que, provided that</i>
<i>logo que, as soon as</i>	<i>até que, until</i>
<i>sempre que, whenever</i>	<i>apenas, scarcely</i>
<i>se acaso, if perhaps</i>	<i>dado que, granted that</i>

Porque, because, as a conjunction is one word, without accent. **Porquê** means *why*? And **Por que**, means *for what*?

The subjunctive is used after certain conjunctions (see page 2666).

INTERJECTIONS

These are exclamations to express emotions, and almost every district in Portugal and Brazil has its own.

The following, however, are widely used :

To call a person's attention. *Olá*, followed by the person's name. *Olá o João*. Or, one can say *olha ! listen !*

To express anger or impatience or surprise : *Diabo ! The devil !*

Pleasure or surprise. *Anda ! Pois bem ! Essa é boa !*

Grief. *Que pena ! What a pity, shame.*

Deep grief. *Bom Jesus or Santo Deus ! Ai Jesus !*

Viva ! This is a common exclamation meaning *hallo* as well as *Long live*.

Adeus ! Adieu, good-bye

NOTE ALSO. *Ai !* I express pain or grief. *Fora ! Get out ! Basta ! Enough ! Bis ! Again (at a theatre).* *Pch ! Hush ! Vamos ! Come on (let's go).* *Pois não ! Most certainly ! Graças a Deus ! Thank God ! Por Deus ! Be Jove ! Bravo ! Good, bravo ! Cuidado ! Look out !*

LESSON 8

Word Building, Idioms, and Correspondence

IN Portuguese and English there are thousands of words which resemble each other, because of their common parentage in Latin, and the Portuguese words are easily recognizable. For example, the word *mortalidade* is *mortality*. But there is another factor most encouraging to the learner : Portuguese has a capacity for forming new words by adding an

ending. Hence many more thousands of words can quickly be learnt if one knows thoroughly the essential words given in the vocabulary in pages 2678-2684, and the endings given below and overleaf. It is perhaps inadvisable to attempt to learn the endings on a first perusal. But sooner or later it will be necessary for the student to master them.

PRINCIPAL ENDINGS, WITH THEIR MEANINGS

Ending	Meaning	Simple Word	New Word
-ACA	result of action	fumo, smoke	fumaça, cloud of smoke
-AÇO	large quantity	rico, rich man	ricaço, plutocrat
-DAO	makes abstract nouns of adjectives	escuro, dark	escuridão, darkness
-ANO	inhabitant of a country	América	Americano, American
-ACHIO			
-ICHO	contempt, inferiority	papel, paper	papelucho, waste paper
-UCHO		rio, river	riacho, stream
-ADA	stroke or blow	facu, knife	facada, stab, cut
	quantity or collection	garfo, fork	garfada, forkful
-ADE	derivative substance	limão, lemon	limonada, lemonade
-DADE	make abstract nouns	mal, bad	maldade, evil
-ADO	corresponds to English endings	eleitor, elector	eleitorado, electorate
-ATO	-ship, -ate	professor, professor	professorado, professorship
-GEM	corresponds to -age	fôlha, leaf	folhagem, foliage
-AL	corresponds to -al	homem, man	homenagem, homage
-ALHA	augmentative with an element of contempt	pessoa, person	pessoal, personal
-ÇA		cão, dog	canalha, trash, rabble
-CIA	make abstract nouns	esperar, to hope	esperança, hope
-AMA		dinheiro, money	dinheirama, wealth
-AME			
-UMF	accumulation or extension		
-ANHA		monte, mount	montanha, range of mountains
-ARIA	corresponds to -ry	galante, gallant	galantaria, gallantry
-ERIA	indicates acts or their qualities	padre, father	padrasto, step-father
-ASTO, -A	relationship, not by blood	amar, to love	amável, lovable
-VEL	-able, -ful, -worthy	temer, to fear	temível, fearful
-EDO			
-EDA	a place of	vinha, vine	vinhedo, vineyard
-ÓIRO, -A	place or instrument	beber, to drink	bebedeiro, drinking place
-TOR	the doer or agent	escrever, to write	escritor, writer
-DOR		cantar, to sing	cantador, singer
	tree or plant	laranja, orange	laranjeira, orange tree
-EIRO, -A	container of	tinta, ink	tinteiro, inkpot
	quantity of	pó, dust	poeira, dust cloud
	maker or agent	sapato, shoe	sapateiro, shoemaker
-ES (-EZA)	nationality and quality	França, France	francês, French
-IDENTO	quality of	rico, rich	riqueza, wealth
-SCO, -A	likeness to	corpo, body	corpulento, corpulent, fat
-IA, -IO	result	chuva, rain	chuvisco, drizzle
-ICE		alegre, happy	alegria, joy, happiness
-icia			
-icle	personal defect or quality	velho, old	velhice, old age
-ica			
-IÇO	English -ious	advento, advent	adventício, adventitious
-ício	resemblance to	palha, straw	palhico, chaff
-IDO, -A	result	sair, to go out	saida, exit
-IL	quality	senhor, lord	senhoril, lordly
-ino	living place	toiro, bull	toiril, bull compound
-IO	gathering of	mulher, woman	mulherio, gathering of women
	quality	senhor, lord	senhorio, lordship
-ISMO		social, social	socialismo, socialism
		patriota, patriot	patriotismo, patriotism
-ISTA	-ist, trade	jornal, newspaper	jornalista, journalist
	profession or philosophy	explodir, to explode	explosivo, explosive
-IVO	-ive	casar, to marry	casamento, marriage
-MENTO	result of action	lavar, to wash	lavatório, lavatory
-ORIO	place		
	cause		
-OSO	forms adjectives from nouns	areia, sand	areinoso, sandy
-uoso		quieto, quiet	quietude, quietness
-UDE	makes abstracts from adjectives	fresco, fresh, cool	frescura, coolness
-URA	quality		
	result of action		

Augmentatives and Diminutives

Although these are of frequent occurrence, the student is advised to be a little wary in their use, as it is quite easy to "drop a brick" by using the wrong *augmentative* or *diminutive* ending, as what follows will show:

-ão is perhaps the commonest augmentative and its fundamental meaning is simply enlargement:

a caixa, the box, o caixão, the big box, chest.

But it can have a contemptuous or depreciatory meaning:

chorar, to weep, **chorão**, a great whiner.

-ão is a *masculine* ending, of which the *feminine* is **-ona** : **chorona**. **-ão** remains a masculine ending, even when added to a feminine noun :

o mulherão, the big, or fat woman. A **pedra**, stone, **o pedrão**, monument. NOTE : **o rato**, mouse, **ratão**, rat

-aço, **-az** and **-il** are also *augmentative* endings.

The most frequently occurring *diminutive* is **-inho**, **-a**, which become **-zinho**, **-a** when added to a word with a nasal ending :

filho, son, **filhinho**, little son. **Mãe**, mother, **mãezinha**, little mother.

NOTE : **avô**, grandfather, **avó**, grandmother, *diminutives* : **avôzinho**, **avózinha**.

Generally the letter **-z-** indicates mere diminution, whereas without the **-z-** there can be a depreciatory meaning :

Mulherzinha means *little woman*, but **mulherinha** means a *scheming woman* (cat).

Hence the necessity for care in the use of these endings.

Other diminutive endings are **-ito**, **-a**, **-zito**, **-a**, while **-ejo** indicates definite scorn :

o animalcjo, the worthless little beast.

Both an *augmentative* and a *diminutive* can be added to the same word. (This adds to the difficulties --and delightful subtleties-- of Portuguese.) For example

a caixa, the box
o caixão, the big box, chest
o caixinho, the fan-sized box
o salãozinho, the good-sized room

Diminutives in **-o** change to **-a** in feminine nouns :

a pedra, stone, **a pedrinha**, pebble

The Portuguese diminutives may express, besides the idea of diminution, the feeling of beauty, pity, endearment, and, as we have seen, contempt or disparagement. There is often something about them which cannot be expressed in English. For example **o pobrezinho** can hardly be translated by "the poor little man," although one might say "the poor little devil" -- but there is a more intense feeling of pity about the Portuguese.

(In Brazil the diminutive is much more widely used than in Portugal, and can be added even to verbs or parts of verbs :

andar, to walk, **um andarzinho**, a stroll. **Dormindo**, sleeping, **estou dormindinho**, I am having "forty winks," a nap. **Adeusinho**, good-bye for the moment. **Estou-zinho pertinho**, I am very, very near

But--warning--the learner must be extremely careful. Experience and only experience can teach the usage, which differs in Portugal and Brazil.)

Diminutives can be added to Christian names, usually with an indication of endearment, though ridicule, hatred, or contempt can be expressed by the ending.

João, John. **Joãozinho**, Jack. **Anã**, **Aninha**, **Anazinha**, **Aninhas**, **Anica**, **Aniquita**, **Anita**. **Pedro**, **Pedrinho**, **Pedrito**.

The *augmentatives* and *diminutives* are so much used in Portuguese that they cannot be avoided. The student should, little by little, learn the principles outlined above, and after that there is only one rule : learn each new word he meets which has an *augmentative* and *diminutive*, with the meaning.

Verbs Formed from Nouns by adding **-AR** : **TELEFONAR**. The **-AR** conjugation is used for all new verbs.

NOTE THE FOLLOWING COMBINATIONS : **casa de jantar**, restaurant, **cartas de jogar**, playing cards, **guarda-roupa**, wardrobe.

It will be seen that Portuguese, like other languages, has the means within itself of enlarging its vocabulary by virtue of word-building. From the point of view of the beginner it is at the same time a difficulty and an encouragement. The greatest difficulty is that the *root* form on which the language builds is sometimes obscured--though never to a great extent--by vowel or consonantal changes. It is an encouragement, because of the wide vocabulary which rapidly comes within the bounds of comprehension.

When the "basis of grammar" and the essential or "root" vocabulary are known, and the principles of word-formation outlined here understood, the meaning of *thousands* of words will appear at once, or at any rate can be conjectured with fair certainty.

IDIOMS : GREETINGS, etc.

An idiom is a turn of phrase peculiar to a language. Thus, when we say **Que quer o Sr. dizer**, literally "What do you wish to say," meaning "What do you mean," that is an idiom. In Portuguese most idioms are peculiarities of usage rather than completely different phrases, as in French, and some of the most common have already been given under the various parts of speech.

The following are useful phrases of greeting, etc. :

Bom dia , or Bons dias	<i>Good morning</i> (Sir)
Senhor	
Boas tardes	<i>Good afternoon</i> , <i>good evening</i>
Boas noites	<i>Good night</i>
Como está o Sr. ?	<i>How are you ?</i>
Muito bem	<i>Very well</i>
Obrigado , muito obrigado	<i>Thank you</i> , <i>very many thanks</i>
Sinto muito . . .	<i>I am very sorry</i>
Estimo muito vê-lo	<i>I am glad to see you</i> . . .
Muito gosto de o conhecer	<i>Very pleased to meet you</i>
Até logo	<i>Good-bye</i> (for the present)
Adeus	<i>Good-bye</i>
O Sr. é português ?	<i>You are Portuguese ?</i>
Sou, sim Senhor	<i>Yes, I am</i>
Como se chama isso ?	<i>What do you call that ?</i>
Isso chama-se . . .	<i>That is called</i> . . .

O Sr. não tem boa cara
Qual é o caminho mais curto
para . . .

Estou constipado
Estou com pressa
Com licença
Que lhe parece ?
Não há remédio

Segundo o meu parecer . . .
Com todo o gozô

You do not look well
What is the shortest way
to . . . ?

I have a cold
I am in a hurry
With your permission
What do you think of it ?
There's nothing to be done
about it

In my opinion . . .
With great pleasure

CORRESPONDENCE

The DATE is written thus : Lisboa, Junho 5, 1957, Lisbon, 5th June, 1957 (see also page 2660).

It is most important when writing a letter to take into consideration the status and relationship of the person addressed—see page 2661 for translation of “you.” The Portuguese are punctilious about this.

A treatise written for the use of the Portuguese lays this down as follows :

Em primeiro lugar pensai na qualidade da pessoa a que a carta vai ser dirigida. E a uma senhora de respeitabilidade, a um superior, a uma pessoa de categoria, a uma colega pouco íntimo, a um amigo dedicado, a uma pessoa de família ? Conforme o indivíduo a que vos dirigis, assim é a fórmula do tratamento.

In the first place, think of the quality of the person to whom the letter is to be directed. Is it a respectable lady, a superior, a person of rank, a slightly intimate colleague, an old friend, or a person of the same family ? In accordance with the individual addressed, so is the formula of treatment :

Ex.^{ma} Senhora, Ex.^{mo} Senhor, Ex.^{mo} Senhor Director, Ex.^{mo} colega, Meu ilustre colega, Am.^o e Sr.,

Meu prezado Colega e amigo, Meu querido primo, Etc., etc.

A Formal Opening : Ex.^{mo} Senhor, Ex.^{ma} Senhora.
A Moderately Familiar Opening : Caro Senhor, Senhor e amigo.

Familiar Opening : Meu prezado, or meu prezado amigo, or meu querido amigo, querido amigo.

A Formal Ending Com o mais profundo respeito
De V. Ex.^a

m.^{to} at.^o, ven.^o, e obg.^o

A Moderately Familiar Ending : Peço aceite a expressão dos meus melhores agradecimentos.

A Familiar Ending : Disponha sempre da amizade sincera de . . .

Or, Com lembranças de . . .

NOTE : Remember that you can hardly make a mistake by keeping to a form of address a little more formal than that which you may believe would be required.

Commercial Correspondence

When addressing a firm, always begin the letter : Amigos e Senhores, or if it is to the manager or director, or secretary, say, Senhor Director, Senhor Secretário, or Amigo e Senhor. And end :

(1) if you are writing for a firm : Somos com estima e consideração de V.S.^a, Atos Ven.^{as} e obg.^{os}

(2) if you are writing for yourself : Subscrevome com estima, de V. S.^a., etc. ; alternatively, Sou com estima de V. S.^a., etc.

LESSON 9

The Essential Vocabulary

MANY thousands of words are similar in English and Portuguese—their roots or “stems” are identical but they take the appropriate Portuguese endings (see Word Building). For example, *ilustrado* means *illustrated*. In the lists which follow, every word must be known. In the Alphabetical List in pages 2679-2684, articles, numbers, some conjunctions, prepositions, etc., already given, including all adverbs made by adding -MENTE to adjectives, and some other words are omitted. Hence the student must know *all* the words already met as well as those which follow.

In memorising vocabulary, the student will find that in the beginning he cannot commit to memory more than ten words or so daily. But after a month he should be able to memorise up to fifty. Much repetition is necessary. It is not necessary to know the essential vocabulary before beginning the reading matter.

Know all the words *both ways*.

O homem, *the man* ; *the man*, o homem. Know them by sight and by sound Repeat the Portuguese aloud

Days of the Week

Domingo	Sunday
Segunda-feira	Monday
Terça-feira	Tuesday
Quarta-feira	Wednesday

Quinta-feira	Thursday
Sexta-feira	Friday
Sábado	Saturday

¹ Feira, a fair or market

Months of the Year

Janeiro	Julho
Fevereiro	Agosto
Março	Setembro
Abril	Outubro
Maio	Novembro
Junho	Dezembro

Seasons

A primavera, <i>Spring</i>	O verão, <i>Summer</i>
O outono, <i>Autumn</i>	O inverno, <i>Winter</i>

Festivals

Páscoa, <i>Easter</i>	Natal, <i>Christmas</i>
Dia de festa, dia feriado, <i>feast-day</i> , or <i>holiday</i>	
Quaresma, <i>Lent</i>	
Sexta-feira santa, <i>Good Friday</i>	
Pentecostes, <i>Whitsuntide</i>	
Férias, <i>holidays</i>	Dia de anos, <i>birthday</i>

Countries, Nationalities, etc.

a Inglaterra, <i>England</i>	um inglês, <i>an Englishman</i>
o Brasil, <i>Brazil</i>	um brasileiro, <i>a Brazilian</i>
a Grã Bretanha, <i>Great Britain</i>	um britânico, <i>a British subject</i> , <i>a Briton</i>
a França, <i>France</i>	um francês, <i>a Frenchman</i>
a Espanha, <i>Spain</i>	um espanhol, <i>a Spaniard</i>
Portugal, <i>Portugal</i>	um português, <i>Portuguese</i>
a Alemanha, <i>Germany</i>	um alemão, <i>a German</i>

a Itália, Italy
a Rússia, Russia
a América do Sul,
South America
a Suécia, Sweden
a Suíça, Switzerland
o Reino Unido, the
United Kingdom

um italiano, an Italian
um russo, a Russian
um sul-americano,
South American
um sueco, a Swede
um suíço, a Swiss
os Estados Unidos, the
United States

Lisboa, Lisbon
um Paulista, a native of
São Paulo
a Mancha, the English
Channel
o Atlântico, the Atlantic
o Tejo, the Tagus

um lisbonense, a native of
Lisbon
um fluminense, a native of
Rio de Janeiro
o Golfo Cantábrico, the
Bay of Biscay
o Amazonas, the Amazon
o Tamisa, the Thames

ALPHABETICAL LIST OF PORTUGUESE WORDS

NOTE: It will be noticed that in this list the words are not in exact alphabetical order—purposely, to make the learning process more sure

A
a, at
abaixo, down, under
abandonar, to abandon
abastança, abundance,
enough
abelha, bee
abençoar, to bless
aberto, open
abraçar, to embrace
abrigo, shelter, overcoat
abrir, to open
absoluto, absolute
absurdo, absurd
acabar, to end
academia, academy
acaso, perhaps
acção, action (also share
in a company)
acender, to set light to
aceitar, to accept
acérca de, relating to
acercar-se, to approach
acertar, to assure
achar, to find
ácido, acid
acidente, accident
acima, above
acomodar, to accommodate
aço, steel
acompanhar, to accompany
aconselhar, to advise
acordar, to awaken
acontecer, to happen
acontecimento, event
acostumar, to accustom
activo, active
actual, present (adj.)
açúcar, sugar
acudir, to help
adiantado, advanced, ahead
adiantar, to advance
adiante, forward, ahead
adição, addition
adeus, good-bye
admirável, admirable
admirar, to admire
admitir, to admit
adotar, to adopt
adorno, ornament
adquirir, to acquire
alfândega, custom house
adulto, adult
advertir, to warn
afirmar, to affirm
afora de, outside of, except
afortunado, fortunate, lucky
agarrar, to grasp
agente, agent
agitar, to agitate, shake
agradável, agreeable,
pleasant
agradecer, to thank
agradecido, grateful
agora, now

água, water
aguardar, to wait (for)
agudo, sharp
agulha, needle
ai, there
aqui, here
afogar, to drown
ajuda, help
ajudar, to help
ajuntar, to join, add
ajustar, to adjust
ala, wing
alcançar, to reach
álcool, alcohol
aldeia, village
alegre, merry, happy
alegria, happiness
além, beyond
alfinete, pin
alfaiate, tailor
algo, something
algodão, cotton
alguém, somebody
algun, some
alento, breath
ali, there
algieira, pocket
alma, soul
almofada, pillow
almoçar, to breakfast
almôço, breakfast
alquilar, to hire, rent
alguilar, bowl, basin
alto, high
altura, height
aluno, pupil
amável, amiable, nice
amanhã, to-morrow
amanhecer, to dawn
amar, to love
ambição, ambition
ambos, both
ameaçar, to threaten
amelhorar, to improve
amigo, friend
amigável, friendly
amizade, friendship
amistoso, friendly
amo, master
amor, love
amostra, sample
analogia, analogy
ancho, broad
andar, to walk, to go
ângulo, angle
anel, ring
animal, animal
aniversário, anniversary
anoite, last night
ante-oncem, day before
yesterday
anterior, anterior, one
before
antes, before
antigo, old

anual, yearly
anunciar, to announce
anúncio, advertisement
ano, year
aonde, where (to)
apanhar, to grasp
aparato, apparatus
aparecer, to appear
apartar, to divide
apelar, to appeal, plead
apelido, surname
apenas, scarcely
aperceber, to understand
apetite, appetite
aplaudir, to applaud
aplicar, to apply
aplicação, application
apartamento, room
apreciar, to appreciate
aprender, to learn
aprovar, to approve
aproveitar, to benefit
ar, air
arco, bow, arch
areia, sand
argumento, argument
arma, weapon
armazem, store, shop
arrancar, to pluck, pull
arranjar, to arrange
arrastar, to drag, creep
arredor, around
(arredores, suburbs)
arrendar, to let (a house,
etc.)

B
bagagem, baggage
baia, bay
ballar, to dance
baile, dance
baixo, below
bala, ball, bullet
balde, bucket
banco, bank
bandeira, banner, flag
bandeja, tray
banhar, to bathe
banha, bath
banquete, banquet
barato, cheap
barba, beard
barbeiro, barber
barco, boat
barrete, cap
barriga, stomach
barril, barrel
barro, clay, earth
base, base
bastante, enough
bastar, to suffice
bastão, stick
batalha, battle
batata, potato
bater, to beat
baú, box, trunk
beber, to drink
bebida, drink
beleza, beauty
belo, beautiful
bem, well
bendizer, praise, bless
bem-vindo, welcome
benefício, benefit
beijo, to kiss
beijo, kiss
beira, side, edge
biblioteca, library
bilhete, ticket
bispo, bishop
bôbo, silly, stupid
boca, mouth
bocado, mouthful, little
boda, wedding
bodega, drinking } house
public
boi, ox
bólsa, purse
bom, good
bomba, pump
bondade, goodness

bonito, pretty
borda, side
borracha, rubber
bosque, wood, forest
bosquejo, sketch
bota, boot
botão, button
branco, white
bravura, bravery
braço, arm (of the body)
brilhar, to shine
brindar, to offer
brando, bland, soft
breve, short
britânico, British
buscar, to seek
bruma, fog
brumoso, foggy
bruto, stupid

C

cá, here
cavaleiro, horseman
cavalleiro, knight, gentleman
cavalo, horse
cavar, to dig
cabeça, head
cabrer, to be able to contain, be contained, or fit
cada, each
cadeira, chair
cadeia, chain
cair, to fall
café, coffee, café
caixa, case, box
calcado, shoes
calcão, trousers
calcular, to calculate
caldeira, kettle
calar-se, to be silent
calor, heat
cama, bed
câmbio, change, exchange
câmara, room
camarada, comrade
caninho, road
caminho de ferro, railway
campanha, bell
campo, field, camp
camisa, shirt
canção, song
cunhão, cannon, gun
cansado, tired
cansar-se, to become tired
cantar, to sing
canto, singing, canto
capacidade, capacity
chamar, to call
chamar-se, to be named, called

chapéu, hat
chave, key
chegar, to arrive
chegada, arrival
cheio, full
chover, to rain
chorar, to weep
cão, dog
capaz, capable
capitão, captain
capítulo, chapter
carvão, coal
carácter, character, temper
carga, cargo
carregar, to load
carinhoso, endearing
carne, flesh, meat
carneiro, sheep
carniceiro, butcher

caro, dear
cara, face
carta, letter
carteiro, postman
caça, hunt
casa, house
casar-se, to get married
cessar, to cease
caso, case, event
castelhano, Castilian
(Spanish language)
catedrático, professor
(university)

causa, cause
causar, to cause
cedo, soon, early
celebrar, celebrate
cena, scene
central, central
centro, centre, middle
cêra, wax
cêra, near
cérebro, brain
certificar, certify
chávena, tea-cup,
chicara cup
chefe, chief
chegar, to arrive
chicote, whip
cesto, basket
céu, sky, heaven
cheque, cheque
choque, shock
chumbo, lead
ciência, science
certo, certain, sure
cigarro, cigarette
charuto, cigar
cima, top, summit
cinta, belt
circular, circular
cidade, city
cidadão, citizen
circunstância, circumstance
civil, civil
claro, clear, light
classe, class
cobrir, to cover
cobre, copper
cozer, to boil, cook
cozinha, kitchen
cozinheiro, cook
coche, coach, cab
coleção, collection
colégio, college
colocar, to place
côr, colour
coluna, column
combinação, combination
começar, to begin, commence
comer, to eat, dine
comercial, commercial
comércio, commerce
cometer, to commit
comida, food, dinner
combater, to fight, combat
cômico, comic
companheiro, companion
como, as, how
cômodo, suitable, fit for
companhia, company
comparar, to compare
comparação, comparison
completo, complete, full up
complicado, complicated
compor, to compose
comprar, to buy
compreender, to understand
comum, common
com, with

conceder, concede
concluir, to conclude
condição, condition
condenar, condemn
conduzir, conduct
confessar, to confess
confiança, confidence
confirmar, to confirm
conforme, according
confundir, to confound
conhecer, to know, be acquainted with
conhecimento, knowledge
(also bill of lading)
consequência, consequence
conseguir, to obtain
conselho, counsel, advice
consideração, consideration
considerar, consider
consistir, to consist
consolar, to console
construção, construction
construir, to build, construct
cônsul, consul
consultar, to consult
conta, account, bill
contar, to count, relate
contemplar, to contemplate
conter, to contain
conteúdo, content(s)
continuar, to continue
conto, tale, number
contra, against
contradizer, to contradict
contrário, contrary
contrato, contract
conversação, conversation
convencer, to convince
convidar, to invite
copiar, to copy
coragem, courage
coração, heart
coroa, crown
corrigir, to correct
correio, post
corrente, current, stream
correr, to run
corresponder, to correspond
corrida, race (- de touros, bull-fight)

colher, to gather
cortar, to cut
coisa, thing
coser, to sew
costa, coast, rib
cozinhar, to cook
cuitar, to cook
costume, custom, habit
criado, servant, waiter
criar, to nurse
criança, child
crescer, to grow
crer, to believe
cristão, Christian (also ch -)
crime, crime
cruel, cruel
cruz, cross
corpo, body
cuidado, care
cuidar, to take care (of)
cultivar, to cultivate
curto, short
custo, cost

D

dama, lady
dançar, to dance
dar, to give
de, of
debaixo, underneath

dever, to owe, have a duty to
decidir, to decide
decisão, decision
declarar, to declare
dedicar, to dedicate
dedo, finger
defender, to defend
defesa, defence
deixar, to leave
delitável, delightful, pleasant
delgado, slender, delicate
delicado, delicate
delicioso, delicious
demanda, request
demasiado, too much
demais, besides
dentro, inside
departamento, department
depender, depend
depositar, to deposit
desaparecer, to disappear
depressão, quickly
descrição, description
desconsolado, disconsolate
descobrir, discover
descurido, neglect
desde, from, since
desejar, to desire
descejo, desirous
desenvolver, to develop
desfazer, to undo
despacho, despatch
despertar, to disturb, awaken
depois, after
destapar, to open
destruição, destruction
destruir, to destroy
deter, to detain
detrás, behind
devagar, slowly
dia, day
diabo, devil
diário, daily (also newspaper)

difficuldade, difficulty
digestão, digestion
diferença, difference
difícil, difficult
digno, worthy (of)
dinheiro, money
Deus, God
direito, right, straight
direcção, direction
director, director
dirigir, to direct
dispor, to dispose
distribuição, distribution
distância, distance
divisão, division
divertir, to divert
dissolver, to dissolve
distinguir, to distinguish
distinto, distinct
distrito, district
distúrbio, annoyance, disturbance

dizer, to say
dobrar, to double
dôçr, double
doce, sweet
doutor, doctor
doer, to ache, pain
doente, ill
doméstico, domestic
dono, master, owner
donde, where
dormir, to sleep
durante, during
durar, to last, endure

E
edifício, building
educação, education
efeito, effect
efetuar, effect, achieve
executar, execute, do
exemplo, example
exercício, exercise
exército, army
elástico, elastic
eleição, election
elétrico, electric
eleger, to elect
elevant, to elevate, lift
embora, out, away
embaixo, down (stairs)
empenhar, to persuade
empregar, to employ
empreender, to undertake
empurrar, to thrust
em, in
enamorar-se, to fall in love
encargo, charge, duty
encarnado, red
encarregar, to encharge
encher, to fill
encima, on, upon, above
encontrar, to meet
endereço, address
enfermidade, illness
enfermo, ill
enganar, to deceive
enlaçar, to bind
enojar, to anger
ensinar, to teach
ente, being (n)
entender, to understand
então, then
entrada, entrance
entrar, to enter
entre, between
entregar, to deliver
enviar, to send
equilíbrio, balance, equilibrium
equivocação, mistake, error
equivocar-se, to make a mistake
errar, to wander
erva, grass
errôneo, erroneous, mistaken
escala, scale
escolher, to choose
escrever, to write
escritor, writer, author
escuro, dark
escutar, to listen
escola, school
esforço, effort
espaço, space
espantar, to astound, frighten
espanhol, Spanish
especial, special
espécie, species, kind
esperança, hope
esperar, to hope, expect, wait for
espírito, spirit
esplêndido, splendid
espirrar, to sneeze
esponja, sponge
esposa, spouse, wife
esquina, corner
estabelecer, to establish
estação, station
estado, state
estar, to be
este, east

estilo, style
estipêndio, stipend, salary
estimular, to stimulate
estrada de ferro, railway (Brazil)
estreito, narrow (n. strait)
estrêla, star
estragar, to waste, spoil
estrutura, structure
estudante, student
estúpido, stupid
estudar, to study
estufa, stove
evitar, to avoid
exato, exact, accurate
exame, examination
excelente, excellent
exceção, exception
exceção, except
existência, existence
existir, to exist
experiência, experience
explicar, to explain
expor, to expose
estender, to extend
extensão, extension
exterior, exterior
estrangeiro, stranger, foreigner
estranhar, to find strange, odd
extraordinário, extraordinary
extremo, extreme, furthestmost

F
fábrica, factory
fabricação, manufacture
faca, knife
fácil, easy
fado, fate (also folk-song)
fala, speech
falar, to speak
falso, false
falta, want, need, shortage
faltar, to fail, be wanting
família, family
famoso, famous
favor, favour
favorável, favourable
favorito, favourite
fazer, to make, do, cause
fazenda, farm, property
fê, faith
fechar, to shut
fechadura, closure
felicidade, happiness
feliz, happy
fêmea, female
feminino, feminine
feio, ugly
fender, split, divide
feno, hay
ferir, to wound
ferro, iron (caminho de, railway)
fértil, fertile
fiar, to confide, trust
ficção, fiction
febre, fever
ficar, to remain, stay
fiel, faithful
feira, festival, feast day
figura, figure
fixar, to fix
fixo, fixed, firm
filho, son (-a, daughter)
fiio, thread
fim, end

fingir, to feign, pretend
fino, fine
firma, business, firm
firme, stiff, firm
físico, physical
fraco, weak
flor, flower
forçar, to force
fôrça, force, strength
fundo, bottom, depth
forma, form
formoso, handsome
fôlha, leaf
fortuna, fortune
fogo, fire
formiga, ant
forno, oven
fugir, to flee
fúfuro, match
francês, French
franco, free
frase, sentence
freguesia, parish, district
frequente, frequent
freio, brake
frente, front, face
fresco, fresh
frio, cold
fruta, fruit
fonte, fountain
fora, outside, out
forte, strong
fumar, to smoke
fumo, smoke (Brazil tobacco)
funcionário, official
fundação, foundation
fundar, to found
fundir, to waste, melt
futuro, future

G
galinha, hen
gado, cattle
ganhar, to get, gain, win
garantir, to guarantee
garfo, fork
garganta, throat
gás, gas
gasto(s), cost(s), expense(s)
gato, cat
general, general (army)
gênero, species, kind
genro, father-in-law
gelar, to freeze
gêlo, ice, frost
gente, people
geral, general (adj)
gerente, manager
glória, glory
governador, governor
governar, to govern
governo, government
gola, collar, gullet
golpe, blow, stroke
gordo, fat, thick
gota, drop
gostar, to taste, enjoy, like
graça, favour, grace
gracioso, elegant
grau, grade
graduar, to graduate
grande, big, great
grão, grain
giz, chalk
gritar, to cry, shout
grosso, thick, coarse
grupo, group
gôsto, taste
gracejo, joke

guarda-chuva, umbrella
guarda-sol, parasol
guardanapo, serviette, napkin
guerra, war
guardar, to take care of
guia, guide

H
habituação, accustomed
haver, to have
harmonia, harmony
herói, hero
heroína, heroine
história, history, story
homem, man
honra, honour, fame
honrar, to honour
hora, hour, time
hospedar, to entertain
hospedaria, inn
hospital, hospital
hotel, hotel
hoje, to-day
humano, human
humilde, humble
humor, humour

I
idade, age
ideal, ideal
ideia, idea
idêntico, identical
idioma, idiom, language
igreja, church
ignorar, not to know, ignore
igual, equal
ilustre, illustrious
imaginar, to imagine
impor, to impose
importância, importance
impossível, impossible
importante, important
importar, to import
importe, amount
imprensa, printing (press)
impressão, impression
imprimir, to print, impress
imposto, tax
impulso, impulse
incendiar, to set fire
inclinação, inclination
inclinado, to incline
incluir, to include
indicar, to indicate
informação, information
indivíduo, individual
influência, influence
informar, to inform
inglês, English (-man)
inimigo, enemy
imediato, immediate
imenso, immense
inquieto, uneasy
insecto, insect
inspirar, to inspire
instrução, education, instruction
instruir, to instruct, teach
instrumento, instrument
inteligência, intelligence
inteiro, entire, complete
intenção, intention
interesse, interest
interessar, to interest
interromper, to interrupt
inútil, useless
inveja, envy
inverno, winter
ir, to go

investigação, investigation
ilha, island
itinerário, itinerary
irmão, brother (f. irmã)

J

já, already
janela, window
jantar, to dine
jamais, never
jaleco, waistcoat
jaqueta, coat
joelho, knee
jornal, newspaper
jovem, young
jogar, to play (a game)
juntar, to add, join
junto, together with
jurar, to swear
justiça, justice
justificar, to justify
justo, just, fair

L

lá, there
lábio, lip
lado, side
ladrilho, brick
lágrima, tear
lã, wool
lançar, to throw
lápis, pencil
laranja, orange
largo, wide, broad
lata, tin
lástima, pity
lastimar, to hurt
lição, lesson
lavar, to wash
leite, milk
lembrar-se, to remember
lenço, handkerchief
ler, to read
levar, to carry, bring
levantar, to raise, lift
língua, language, tongue
lei, law
liberal, liberal
liberdade, liberty
libertar, to liberate
libra, pound
licença, licence, permit
livre, free
livro, book
ligar, to bind
ligeiro, light (not heavy)
lima, file
limão, lemon
limitar, to limit
limite, limit
limpar, to clean
lindo, pretty
linha, line
líquido, liquid
liso, plain
lista, list
local, local
lograr, to enjoy
loiro, blond, fair
lona, canvas
longe, far, away
lutar, to fight, struggle
luzir, to shine
logo, soon, early
lugar, place
lua, moon
luar, moonlight
luva, glove
luz, light

M

macho, male
madeira, wood
mãe, mother
maestro, master
mau (fem. má), bad
mala, handbag
maldade, badness, evil
mandar, to command, send
manejar, to handle
manhã, morning
mancira, manner
manifestar, to show, manifest
mão, hand
manso, tame
manteiga, butter
manter, to maintain
mação, apple
macieira, apple tree
mapa, map
máquina, machine
mar, sea
martelo, hammer
marca, mark
marinha, marine, navy
marmita, saucepan
mais, more (de —, over)
marchar, to march, walk
mas, but
massa, mass
maior, greater
maioria, majority
matar, to kill
matéria, matter
material, material
matrimônio, marriage
meio, half, middle
meia, stocking
melhor, better
melhorar, to improve
memória, memory
mencionar, to mention
menos, less
mente, mind, intelligence
mensagem, message
mentir, to tell lies
mentira, lie
mercador, merchant
mercado, market
mexer, to mix
medo, fear
mel, honey
membro, member
merecer, to merit
mérito, merit
mês, month
mesa, table
metal, metal
meter, to put (in)
método, method
militar, military, soldier
milha, mile
milhão, million
mínimo, minimum, least
ministro, minister
minuto, minute
mirar, to look
mesmo, same
metade, half
moda, manner, fashion
modelo, model
moderno, modern
moer, to grind
moinho, mill
molhado, wet
momento, moment
mono, monkey
montanha, mountain
monte, mountain

moral, moral
morder, to bite
moreno, brown
morrer, to die
mostrar, to show
mover, to move
movimento, movement
muito, much, very
mudar, to change
mudo, dumb
mudança, change
móvel, movable
morte, death
morto, dead
mostra, sample
mulher, woman
multiplicação, multiplication
mundo, world
músculo, muscle
música, music
medicina, medicine
mediante, intermediary
médico, medical doctor
medida, measure, proportion
médio, medium, middle

N

nascer, to be born
nascimento, birth
nação, nation
nacional, national
nadar, to swim
não, no, not
nariz, nose
nata, cream
nativo, native
natural, natural
Natal, Christmas
necessário, necessary
necessitar, to want
negar, to deny
negócio, business, transaction
negro, black
nervo, nerve
nem, neither
ninguém, nobody
nuvem, cloud
nóvo, new
ninho, nest
nobre, noble
noite, night
nomear, to nominate
normal, normal
norte, north
nota, note
notar, to note
notícia(s), news
nu, naked, bare
novo, new
noz, nut
número, number
numeroso, numerous
nunca, never

O

obedecer, to obey
objecto, object
obrigação, obligation
obrigar, to oblige
obra, work
observar, to observe
observação, observation
obstruir, to obstruct
obter, to obtain
ocasião, occasion
ocidental, western
oculto, occult, hidden

oceano, ocean
ocioso, idle
ocupado, occupied, busy
ocupar, to occupy
ocorrer, to occur, happen
ódio, hatred
oeste, west
ofender, to offend
oficial, official
oficina, office
oferecer, to offer
ouvir, to hear
óleo, oil
olvidar, to forget
ôlho, eye
ombro, shoulder
onda, wave
onde, where
ontem, yesterday
operação, operation
oportunidade, opportunity
oração, speech, discourse
ordenar, order
ordenar, to order, put in order
ordinário, ordinary, common

P

paciente, patient
paciência, patience
pacote, parcel
pai, father
página, page
pagar, to pay
pagto, payment
pássaro, bird
país, country
palavra, word
papel, paper
Papa, Pope
paquete, packet
pau, plank, wood
par, pair, equal
pão, bread
parafuso, screw
para, for
parar, to stop
pardo, grey, drab
parede, wall
paralelo, parallel
parente, relation
parque, park
parte, part
partida, departure
partir, to depart, leave
passado, past
passar, to pass
pássaro, bird
passagem, passage
passo, step, pace
pasta, paste
pastel, pie
patrão, owner, "boss"
paz, peace
pé, foot
pedaço, piece
pedir, to ask (for)

pegar, to stick
peixe, fish
ponte, comb
perigo, peril
perigoso, perilous
pêlo, hair
pena, penalty, punishment
penha, rock
pendurar, to hang, suspend
pensamento, thought
pensar, to think
pequeno, small, little
perder, to lose
pior, worse
perdão, pardon
perdoar, to pardon
perfeito, perfect
período, period
perito, expert
permanecer, to remain
permanente, permanent
permitir, to permit
perseverar, to persevere
pescado, fish
pessoa, person
pessoal, personal
persuadir, to persuade
pertencer, to belong to, concern

pesado, heavy
pêso, weight
pedra, stone
pele, skin
perna, leg
prazer, pleasure
plano, plane
planta, plant
prata, silver
praia, beach
praça, place
pleno, full
pobre, poor
população, population
poço, spring, well
poder, power
poderoso, powerful
poema, poem
poeta, poet
polícia, police
poltrona, armchair
pó, powder
por, to put
por, by, for
porque, because, why
porco, pig, pork
pormenor, detail
porção, portion
porteiro, porter
português, Portuguese
porvir, future
possuir, to possess, enjoy
posseção, possession
possível, possible
posição, position
pouco, little
prática, practice
prático, practical
preço, price
precioso, precious
predominar, to predominate
predilecto, preferred, favourite

preferência, preference
preferir, to prefer
pregar, to fix, to nail
pregar, to preach
prego, nail
preguntar, to ask
prémio, reward, prize
prenda, gift

pronsa, press
preparação, preparation
preparar, to prepare
presença, presence
presentear, to present, give
presente, present
preservar, to preserve
presidente, president
presstes, ready, prompt, quick

presumir, to presume
presunto, ham
pretender, to pretend
preto, dark, black
primavera, spring (season)
primo, cousin
princípio, first
principal, principal
princípio, beginning
pressa, hurry
prisão, prison
provável, probable
probabilidade, probability
provar, to prove
prova, proof
prover, to provide
problema, problem
perseguir, to pursue
procurar, to obtain, try, look for

produzir, to produce
produto, product
professor, professor, teacher
proibir, to prohibit
pronto, quick, ready
prometer, to promise
pronunciar, to pronounce
pronúncia, pronunciation
propina, gratuity, tip
propor, to propose
proporção, proportion
proposta, proposal
prosa, prose
próprio, own, proper
protecção, protection
provincia, province
próximo, next
projecto, project
povo, people
ponte, bridge
porta, door
porto, gate, harbour
pois, then
publicar, to publish
público, public
pulmão, lung
pulgã, flea
punho, fist
punhado, handful
ponta, point
puro, pure

Q
qualidade, quality
quadro, picture, frame
quando, when
quantidade, quantity
quasi, almost
quarto, fourth
que, what, which
questão, question
queixar-se, to complain
queimar, to burn
queijo, cheese
quem, who
querer, to like, love, wish
querido, dear
química, chemical, chemistry
quinta, cottage

R
rainha, queen
raiz, root
ralo, thin, rare
rama, branch
rapaz, boy
rapariga, girl
rápido, rapid
raro, rare
rato, mouse (ratão, rat)
raça, race
razão, reason, right
reação, reaction
receber, to receive
recente, recent
recheio, receipt
reclamação, claim
reclamar, to claim, vindicate
recobrar, to recover
reconhecer, to recognize
recordar, to remind, recollect
recorrer, to go over again
receio, fear
rede, net
redondo, round
reduzir, to reduce
referir, to refer
rei, king (El-rei, the king)
relâmpago, lightning
regra, rule
regressar, to return, turn back
regular, regular
rir, to laugh
religião, religion
religioso, religious
relógio, watch, clock
render, to render, yield
renome, renown
renovar, to renew
renda, revenue (also lace)
reparar, to repair
repetir, to repeat
rezar, to pray
representar, to represent
república, republic
reservar, to reserve
resfriar, to cool
respeito, respect
responder, to reply
resposta, reply
resultar, to result
reter, to retain
retrato, portrait
reunião, reunion
rebrantar, to shoot
revista, review
revogar, revoke
ribeira, bank (of a river)
rico, rich
rincão, corner
rio, river
ritmo, rhythm
roubar, to rob, steal
rodear, surround, go around
roer, to chew, masticate
rogar, to request
romper, to break
roupa, clothing
roxo, red, scarlet
rosa, rose
rosto, face, countenance
rua, street
roda, wheel
rôgo, prayer, request
ruidoso, noise

S
saber, to know

sabedoria, knowledge, wisdom

sábio, wise
sacar, to take out of
saco, sack
sacrifício, sacrifice
saida, exit
sal, salt
salão, drawing room
sala, room, hall
salvar, to save
saúde, health
saudar, to salute
são, sound, healthy
São, santo, saint, holy
sangue, blood
selvagem, savage
salvo, safe
sanar, to cure
sapato, shoe
sapateiro, shoemaker
satisfação, satisfaction
sazão, season
secção, section
seco, dry
secredo, secret
secretário, secretary
seda, silk
sede, thirst
sede, seat
seguir, to follow
segurar, secure, assure
segundo, second
seguro, sure, secure
segurança, insurance, insurance

selo, seal
selva, wood, jungle
semana, week
semelhante, similar
sempre, always
senda, path
sinal, signal
sinalar, to signal
senhor, Mr., sir, gentleman
senhora, Mrs., madam, lady
senhorio, right, authority over

sentar, to sit
sentido, sense
sentir, to feel
separar, to separate
ser, to be
sério, serious
serviço, service
servir, to serve
severo, severe
sexo, sex
se, if
século, century
seguir, following
sem, without
sequer, still, nevertheless
sim, yes
singular, singular
sino, bell
sistema, system
situação, situation
silêncio, silence
silencioso, silent
simpatia, sympathy
simpático, sympathetic, pleasant

simplex, simple, single
sobre, on, upon
sobremesa, dessert
social, social
sociedade, society
só, alone, only
sol, sun

soldado, *soldier*
sólido, *solid*
sombreiro, *hat*
voltar, *let loose, loosen*
solteiro, *bachelor*
sombra, *shade, shadow*
submeter, *to submit*
soar, *to sound*
sonhar, *to dream*
som, *sound*
sono, *sleep*
sopa, *soup*
soprar, *to blow*
surdo, *deaf*
surprender, *to surprise*
substância, *substance*
substituir, *substitute*
suspeitar, *to suspect*
suspeição, *suspicion*
suave, *smooth, soft*
suster, *to sustain*
súbito, *immediately, sudden*
substituto, *substitute*
sucesso, *event, result*
sujo, *dirty*
sul, *south*
sólido, *salary, wages*
solo, *soil*
sólto, *free*
sonho, *dream*
sorte, *luck, destiny*
sofrer, *to suffer*
sugerir, *to suggest*
sujeito, *subject*
soma, *sum*
superfície, *surface*
superior, *superior, better*
supor, *to suppose*
suposto, *supposing (that)*
suspender, *to suspend*

T

tal, *such*
talvez, *perhaps*
tamanho, *dimension, measure*
também, *also*
tão, *so, as*
tanto, *so much*
tardar, *to be late*
tarde, *late*
tarde (n.), *evening, afternoon*
teatro, *theatre*
telefonar, *to telephone*
telefone, *telephone*
telegrama, *telegram*
tremor, *to tremble*
ter, *to have*
tempestade, *storm*
templo, *temple, church*
teoria, *theory*
terminar, *to end*
término, *term, limit*
terreno, *territory, land*
terrível, *terrible*
território, *territory*
testemunho, *witness*
tempo, *weather*
tenda, *shop*
terra, *land, earth*
têso, *stiff*
tesouro, *treasure*
toiro (touro), *bull*
tinta, *ink*
tio, *uncle*
tipo, *type*
tirar, *to draw*
título, *title*
tocante, *touching, relating to*
tocar, *to touch, play an instrument*
todavia, *yet*
todo, *all*
tomar, *to take*
tonelada, *ton*
torcer, *to twist*
torta, *pastry*
torto, *twisted, crooked, one-eyed*
tosse, *cough*

total, *total*
trabalhar, *to work*
traduzir, *to translate*
traje, *dress*
trazer, *to bring, lead*
tranquilidade, *peace, quietness*
tranquilo, *quiet*
transferir, *to transfer*
transportar, *to transport*
trapo, *rag*
trás, *behind, after*
tratamento, *treatment*
tratar, *to treat, deal*
traçar, *to trace*
trem, *train (also comboio)*
tremendo, *tremendous*
trepar, *to climb*
trigo, *wheat*
tribunal, *court, tribunal*
triste, *sad*
tristeza, *sadness*
trovão, *thunder*
tubo, *tube*

U

ultimo, *last*
único, *only, unique*
unidade, *unity*
união, *union*
unir, *to unite*
universal, *universal*
universidade, *university*
usar, *to use, wear out*
uso, *use*
vaca, *cow*
vácuo, *vacuum, empty*
vagão, *waggon, carriage*
valer, *to be worth*
vale, *cheque*
vão, *vain*
vapor, *steam, steamer*
variedade, *variety*

variável, *variable*
varão, *man, male*
vasilha, *dish, vessel*
vase, *vase*
vazio, *empty*
vela, *candle*
vencer, *to conquer*
vender, *to sell*
veneno, *poison*
ver, *to see*
vir, *to come*
venda, *shop, sale*
vantagem, *advantage*
verão, *summer*
verdade, *truth*
verdadeiro, *true*
verde, *green*
vergonha, *shame*
verso, *verse*
vestido, *clothing*
vestir-se, *to dress*
viagem, *voyage, trip*
vez, *time, occasion*
vía, *way, means*
vibração, *vibration*
vidraça, *glass (for windows)*
vida, *life*
velho, *old*
vento, *wind*
vinho, *wine*
violento, *violent*
violeta, *violet*
virtude, *virtue*
visita, *visit*
visitar, *to visit*
vista, *view*
viver, *to live*
vivo, *living*
voar, *to fly*
vão, *flight*
volume, *volume*
volver, *to return, turn*
voto, *vote*
voz, *voice*
volta, *turn*

LESSON 10

Reading Exercise

HAVING mastered the general principles of Portuguese grammar, and learnt, or learnt in part, the essential vocabulary, now comes the test! Here is an extract from *Gulliver's Travels* based on the Portuguese version by Henrique Marques Junions. The orthography is that of the pre-1940 edition, with modern accents. This is to familiarise the learner with the old spelling in which many books are printed.

Try to read the Portuguese text without the aid of the English. If you find that you cannot make out the sense, then you do not know your grammar and vocabulary well enough. Persist

with *Gulliver* in Portuguese, working out each sentence, referring back to grammar and vocabulary when necessary. This will clarify many difficulties and drive home grammar and words.

If, when you have done this, you are still puzzled, then there is only one thing to do: start at the beginning of the Course and go over it all again. In any event, this will do no harm. What you must realise is that the Course provides you with enough knowledge to make your way through a page of normal Portuguese. And it is now up to you to make the best of that knowledge.

GULLIVER'S TRAVELS

VOYAGE TO LILLIPUT

AN ACCOUNT OF MILDENDO, THE CHIEF TOWN OF LILLIPUT, AND THE KING'S HOUSE, —A TALK BETWEEN THE WRITER AND A CHIEF

VIAGENS DE GULLIVER

Viagem a Lilliput

DESCRIÇÃO DE MILDENDO, CAPITAL DE LILLIPUT, E DO PALÁCIO DO IMPERADOR — CONVERSA ENTRE O AUTOR E UM SECRETÁRIO DE ESTADO

SECRETARY ABOUT THE BUSINESS OF THAT NATION— THE WRITER MAKES AN OFFER TO THE KING OF HIS SUPPORT IN HIS (THE KING'S) WARS.

When I had been made free, my first desire was

RELATIVA AOS NEGÓCIOS DO IMPÉRIO—OFERECIMENTO QUE O AUTOR FEZ AO IMPERADOR DE SERVIR NAS SUAS GUERRAS

O primeiro requerimento que apresentei, depois de

that I might see Mildendo, the chief town. The King readily gave me that authority, but with a special request that I would do no damage to the townsmen or their houses. My design to come and see the town was made public. The wall round it is two and a half feet high and at least eleven inches wide, so that a carriage and horses may go round it very safely; and there are strong high lookout places at distances of ten feet.

Stepping over the great west door, I went very slowly and sideways through the two chief streets, dressed only in my short undercoat, for fear of damaging the roofs of the houses with the skirts of my coat.

I went with the greatest care so as not to put my foot on any persons who might still be in the streets, though the orders were that everyone was to keep in his house, to be out of danger. The top windows and roofs of the houses were so full of onlookers that it seemed to me that in all my journeys I had not seen a place in which so great a number of persons were living.

The town is a true square, the sides of the wall being all 500 feet long. The two great streets which go across, cutting it into four quarters, are five feet wide. The narrow streets, into which I was unable to go, but only saw when I went by, are from twelve to eighteen inches.

The town has space for 500,000 persons: the houses are from three to five floors high; the stores and markets full of goods

The King's house is in the middle of the town, at the meeting of the two great streets. It is shut in by a wall two feet high, at a distance of twenty feet from the building. I had the King's authority to go over the wall, and the space was so wide between

ter alcançado a minha liberdade, foi para obter licença de visitar Mildendo, capital do império. O imperador deferiu-o, recomendando-me que não causasse dano algum aos habitantes nem tão pouco às suas moradias. O povo foi avisado por uma proclamação do desejo de que eu estava possuído de visitar a cidade. A muralha que a circundava era da altura de dois pés e meio e da espessura de oito polegadas, pelo menos, de maneira que um carro podia andar por cima e dar a volta à cidade com segurança, e era flanqueada de fortes torres distanciadas umas das outras dez pés.

Passei por cima da grande porta ocidental e caminhei vagarosamente e de lado pelas duas ruas principais, levando apenas o colete vestido, recendo que as abas do gibão fizessem algum estago nos telhados e beiras das casas.

La como o máximo cuidado, não fosse pisar algumas pessoas que se encontravam pelas ruas, a pesar das claras ordens expressas a toda a gente para que se fechasse em casa, em quanto em andasse de passeio. Os balcões, as janelas dos primeiros os, segundos e terceiros andares, as das aguásfurdadas ou trapeiras, e os próprios beirais estavam tão apinhados de espectadores, que vi logo ser enorme a população.

A cidade forma uma espécie de quadrilátero tendo cada lado de muralha quinhentos pés de comprimento. As duas ruas maiores que se cruzam e a dividem em quatro quarteirões iguais, têm cinco pés de largura. As ruas pequenas, aonde me não foi possível entrar, têm a largura de doze a dezoito polegadas.

A cidade pode comportar quinhentas mil almas. As casas têm três ou quatro andares. As lojas e os mercados são bem sortidos.

O palácio (a casa) do imperador (del-rei) edificado no centro da cidade, onde as duas principais ruas se encontram, é rodeado duma elevada muralha de dois pés e está vinte pés distanciada do edifício. Sua majestade dera-me licença para eu transpor duma perna da

that and the house that I was able to get a view of every side of it without any trouble. The outer space is a square of 40 feet, and there are two other squares inside it. In the farthest one are the King's rooms, which I had a strong desire to see, but it was very hard, because the great doors between one square and another were only eighteen inches wide.

Now, the buildings of the outer square were at least five feet high, and it was not possible for me to get over them without doing them great damage, though the walls were strongly made of cut stone, and four inches thick. At the same time the King had a great desire for me to see his beautiful house; but this I was not able to do till three days after. In these three days I was cutting down with my knife some of the tallest trees in the King's wood, which was at a distance of about a hundred yards from the town.

With these trees I made two seats with three legs, about three feet high, and strong enough to take my weight. The townsmen were given news of my coming a second time, and I went through the town to the King's house with the two seats in my hands. When I came to the outer square I got up on one seat and took the other in my hand, and with great care, put it over the roof and down on to the space between the first and second squares, which was eight feet wide. Then stepping over the building from one seat to the other without any trouble, I got the first one up after me with a hooked stick. In this way I got into the inner square, and going down on my side, I put my face to the windows of the middle floors, which had been kept open on purpose, and there before me were the most beautiful rooms of which it is possible to have an idea.

There I saw the Queen and the young Princess in their separate rooms with

aquela muralha, a fim de ver o seu palácio por todos os lados. O átrio exterior é um quadrado de quarenta pés e compreende dois outros átrios, e no mais interior que ficam os aposentos de sua majestade, que eu tinha grande desejo de ver, o que era difícil tarefa, visto como as portas maiores tinham apenas dezoito polegadas de alto por sete de largo.

Demais, as construções do átrio exterior elevavam-se a cinco pés de terreno e tornava-se-me impossível dar uma perna por cima delas sem risco de quebrar a lousa dos telhados, enquanto os muros me não dessem cuidado por serem solidamente construídos com pedras de quatro polegadas de espessura. O imperador, entretanto, tinha grande vontade de que eu visse a magnificência do seu palácio, mas só ao cabo de três dias é que me encontrei em estado de satisfação depois de haver cortado com o meu canivete algumas das maiores árvores do parque imperial afastado da cidade cinquenta toesas aproximadamente.

Dessas árvores fiz dois tamboretos com três pés de altura cada um e tão fortes que pudesem aguentar-me o peso do corpo. Sendo a população novamente prevenida, tornei a atravessar a cidade e dirigi-me para o palácio, levando na mão os dois tamboretos. Quando cheguei a um dos lados do átrio exterior subi para um tamborete e segurei o outro. Passei este por cima dos telhados e pui-o delicadamente no chão, no espaço que havia entre o primeiro e o segundo átrio, que tinha oito pés de largura. Em seguida passei muito comodamente por cima das construções, servindo-me dos tamboretos e, quando me encontrei do lado de dentro, tirei com um gancho o tamborete que ficara do lado oposto. Deste modo consegui chegar, até ao átrio mais interior onde, deitando-me de lado, meti a cara por todas as janelas do primeiro andar que tinham deixado ficar abertas de propósito, e vi os mais magníficos aposentos que 'imaginar se possa.

Vi também a imperatriz e a jovem princesa nos seus quartos, rodeadas da sua

their chief servants about them. The Queen was pleased to give me a very kind smile, and put her hand out of the window to be kissed

One morning, about two weeks after I had been made free, Redresal chief secretary (as he is named) for private business, came to my house with only one servant. He gave orders for his carriage to be kept for him at a distance and made a request for an hour of my time, to which I readily gave an agreement, because he was a person of high position and great qualities, and because of the kind help he had given me when I was putting my troubles before the King. I said I would come down to the floor so that he might get to my car with less trouble, but he said he would be more pleased if I took him up in my hand while we were talking. He first said how pleased he was that I was free, and that to some degree he was responsible for that happy business; but however, if it had not been for the present condition of things in the government, I might not have been made free so quickly. "Because," he said, "though to other countries, we seem to be so well-off, we have two very bad things to put up with—a violent group in the nation itself, and the danger of attack from outside by a very strong country. As to the first, I have to make it clear to you that for more than seventy months past there have been two groups fighting for power in this country under the names of *Tramecksan* and *Slameckyan*, from their high and low shoes, which is the only point in which they are different from one another.

"It is said, in fact, that the high shoes are more in harmony with our old form of government. But however this may be the King has come to a decision that all who are in his government are to have low shoes, and all who are in positions dependent on the King, as you have no doubt seen; and the King's heels are lower by at least a *drurr* than any of his government (*drurr* is a measure about the fourteenth part of an

comitiva. Sua majestade imperial dignou-se sorrir-me graciosamente e deu-me pela janela a mão para eu beijar.

Quinze dias depois de haver recuperado a liberdade, recebi a visita de Redresal, secretário de estado encarregado das missões particulares, que veio apenas acompanhado por um criado. Deu ordem para que o coche o esperasse a certa distância e pedi-me que lhe concedesse uma hora de audiência, que eu concedi com muito gosto, porque era uma pessoa de alta posição e grandes qualidades, e porque me ajudava com o imperador. Propôs-lhe deitar-me no chão para que pudesse ficar à altura dos meus ouvidos. Ele, porém, preferiu que o tomasse na palma da mão durante a conversa. Principiou por me felicitar pela minha liberdade, dizendo que podia gabar-se de ter contribuído um pouco para tão feliz resultado. Em seguida acrescentou que, se não fôra o interesse que a corte tomara, não seria tão depressa que eu a obtivera, prosseguindo: "Embora o nosso estado pareça florescente aos olhos do estrangeiro o que é certo é que temos dois grandes males a debelar: de dentro uma poderosa facção, de fora, a invasão de que estamos ameaçados por um formidável inimigo. Com respeito ao primeiro, preciso é que saiba que há setenta luas e picos que existem dois partidos contrários neste império, sob os nomes de *TRAMECKSAN* e *SLAMECKSAN*, termos derivados de altos e baixos tacões (*heels*) dos seus sapatos, pelos quaes se distinguem.

"Não falta quem seja de opinião, é facto, que os tacões altos são mais conformes à nossa antiga constituição. Apesar disso, sua majestade resolveu servir-se apenas dos tacões baixos na administração do governo e em todos os cargos que dependem da coroa. Pode mesmo verificar que os tacões de sua majestade imperial são, pelo menos, mais baixos um *drurr* do que os de qualquer outra pessoa da corte. (O *DRURR* é aproximada-

inch). The feeling of hate between these two groups is so great that they will not have food or drink or any talk with one another. We take it that there are a greater number of *Tramecksan*, or high shoes, than of us, but all the power is on our side.

"We have a fear that the Prince, the future King, has some tendency in the direction of the high shoes. At least, it is quite clear to us that one of his shoes is higher than the other, which gives him an unequal walk.

"Now in the middle of these troubles inside the country, there is danger of an attack from the island of *Blefuscu*, which is the other great nation of the earth, almost as great and strong as this of the King. As to what you have said, that there are other countries and governments on the earth with beings of the same size as yourself our wise men are in much doubt about it, and would be happier in the belief that you have come down from the moon or from one of the stars. Because it is certain that a hundred beings of your size would in short time make destruction of all the produce and animals in the King's lands. In addition, our histories of six thousand months say nothing about any other parts but the two great countries of *Lilliput* and *Blefuscu*. These two great powers, as I was going to say, have been at war for the past 36 months. It had its start in this: everyone is in agreement that the old way of opening an egg at a meal was at the greater end.

"But the father of the father of the present King, while he was a boy, was about to have an egg one day, and, in getting it open in the old way, by chance one of his fingers was cut. For this reason, the King, his father, made a law ordering a serious punishment for anyone opening an egg at the greater end. The nation was so angry at this law, our histories say, that there have been six attacks against the

mente a décima quarta parte duma polegada.) O ódio dos dois partidos está em tal grau que não comem, não bebem juntos, nem se falam. Temos quasi que a certeza de que os *Tramecksans* ou tacões altos são em maior número do que nós: a autoridade, porém é na nossa mão.

"Contudo, andamos suspensos de que sua alteza imperial, o presuntivo herdeiro da coroa, tem alguma inclinação para os tacões altos. Pelo menos tivemos ocasião de ver que um dos seus tacões é mais alto do que o outro, o que o faz coxear um pouco.

"Ora, no meio destas intestinas dissensões, estamos ameaçados duma invasão pelo lado da ilha de *Blefuscu*, que é outro grande império do universo, quasi tão grande e tão poderoso como este, porque, segundo temos ouvido dizer, há outros impérios, reinos e estados no mundo, habitados por criaturas humanas tão grandes e tão altas como vós, os nossos filósofos, porém, põem suas duvidas e preferem conjecturar que existis da lua ou dalguma estrêla, porque o que é facto é que cem mortais do vosso tamanho consumiriam em pouco tempo toda a fruta e todo o gado dos estados de sua majestade imperial. Demais, os nossos historiadores, há seis mil luas, não fazem referência a outras regiões senão aos dois grandes impérios de *Lilliput* e de *Blefuscu*. Estas duas numerosas potências têm, como ia dizendo, andado empenhadas durante trinta e seis luas numa guerra muitíssimo acesa, e motivada pelo seguinte: toda a gente concorda em que a maneira primitiva de partir os ovos antes de serem comidos é bater com eles no rebordo.

"Mas o avô de sua majestade imperante, em criança, estando para comer um ovo, teve a infelicidade de cortar um dedo, o que deu motivo a que o imperador seu pai lavrasse um decreto em que ordenava aos seus súbditos, sob graves penas, que partissem os ovos pela extremidade mais delgada. Este decreto irritou tanto o povo que, consoante narram os nossos cronistas, houve por essa época seis revoltas numa

governments because of it, in one of which a King was put to death, and in another, a King's rule was ended. The rulers of Blefuscu were frequently responsible for these troubles in the country, and when they were over, those who were sent out of Lilliput, went there. It is said that at different times 11,000 persons have been put to death for going on opening their eggs at the greater end.

"Hundreds of books of great size have been printed on this question; but for a long time the distribution of books by the Great-endsians has been stopped, and there has been a law to keep any of the group from having positions

"At the time of these troubles, the rulers of Blefuscu frequently made protests through their representatives, saying that we were making a division in religion by going against one of the chief teachings of our great teacher Lustrog, in the 54th part of the Blundercrall, which is their Koran.

"But this is taken to be only a false reading of these words: 'All who have true belief get their eggs open at the right end,' and which is the right end,

das quais um imperador perdeu a vida e outro a coroa. Estas questões intestinas foram sempre fomentadas pelos soberanos de Blefuscu e, quando as sublevações foram sufocadas, os culpados refugiaram-se neste império. Pelas estatísticas que se fizeram, onze mil homens, em diversas épocas, preferiram morrer a submeter-se ao decreto de partir os ovos pela extremidade mais delgada.

"Foram escritas e publicadas centenas de voluminosos livros acerca deste assunto, mas os livros que defendiam o modo de partir os ovos pela extremidade mais grossa foram proibidos desde logo, e todo o seu partido foi declarado incapaz de exercer qualquer função pública.

"Durante a ininterrupta série daqueles motins, os imperadores de Blefuscu fizeram frequentes recriminações por intermédio dos seus embaixadores, acusando-nos de praticar um crime, violando um preceito fundamental do nosso grande profeta Lustrog no quinquagésimo quarto capítulo do Brundecral, que é seu Alcorão

"Isto, porém, foi considerado como uma simples interpretação do sentido do texto, cujos termos eram que 'Todos os fiéis quebrarão os ovos pela ex-

seems, in my poor opinion, to be a question for every man's private feeling; or at least in the power of the chief judge to say

"Now the Greatendians who were sent out of the country got so much credit in the circle of the ruler of Blefuscu, and so much secret support from their group in this country, that there has been a violent war between the two nations for 36 months, in which first one and then the other has seemed to get the best of it.

"In this time there has been on our side a loss of 40 warships, and a much greater number of smaller vessels, together with 30,000 of our best fighters by land and by sea. The damage on the other side is said to be somewhat greater than ours.

"However, they have now got ready a great number of ships, and are about to make an attack on us. The King, who has great belief in you, because you have no fear and are very strong, has given me orders to put this statement of his business before you."

tremidade mais cômoda, e na minha opinião, deve deixar-se consciência de cada um a resolução de qual seja a extremidade mais cômoda, ou pelo menos, é a autoridade do soberano magistrado que compete resolver.

"Ora, os partidários da extremidade mais grossa, que se encontravam exilados viram tanta diferença na corte do imperador de Blefuscu e tanto auxílio e apoio ao nosso próprio país, que se seguiu uma grande guerra sanguinolenta entre as duas nações que durou trinta e seis luas, com vários êxitos para qualquer das partes.

"Nesta guerra perdemos quarenta naus de linha e um grande número de navios com trinta mil dos nossos mais valentes marinheiros e soldados. Dá-se como certo que a perda sofrida pelo nosso inimigo foi superior.

"Seja como for, o que é facto é que os de Blefuscu prepararam agora um temível esquadrão, para operarem um desembarque nas costas do nosso império. Ora, sua majestade imperial, tendo a máxima confiança na vossa coragem, e tendo em altíssimo apreço a vossa força, pediu-me que vos pormenorizasse todos estes assuntos."

EXTRACT FROM "O SÉCULO" OF LISBON

The student should now be able to read the following:

CORREM PERIGO

os tesouros existentes na
Biblioteca Nacional

NO VALOR DE MUITOS MILHARES DE CONTOS

segundo afirmou ontem

O DEPUTADO SR. DR. MÁRIO DE ALBUQUERQUE, O QUAL PEDIU A ATENÇÃO DO GOVÊRNO PARA ÊSTE CASO GRAVE QUÊ MUITO AFECTA O NOSSO PATRIMÓNIO CULTURAL

Voltou a funcionar ontem a Assembléa Nacional, com a presença de sessenta e cinco deputados. Presidiu o sr. prof. dr. José Alberto dos Reis, que comunicou ter recebido, para ratificações, o decreto-lei n.º 30-332.

No período de antes da "ordem do dia," o sr. dr. Mário de Albuquerque, vivamente apoiado por toda

a assembleia, chamou a atenção do Góvêrno para "dois casos graves para a nossa cultura—o drama da Biblioteca Nacional, e a triste situação do Museu da Marinha." A primeira, onde se acumulam preciosidades e raridades que, uma vez inutilizadas, não mais poderão ser substituídas, não tem condições de defesa contra os malefícios da traça. Depois de lembrar que o Estado gasta, por ano, aproximadamente, oitocentos contos com a Biblioteca, verba considerável para o nosso apertado meio intelectual, referiu que o terrível insecto deteriora e destrói anualmente uma quantidade aféitiva de espécies. "Um alto funcionário da Biblioteca dizia-me, há anos, apressadamente: contou-me que o valor dos prejuizos deve oscilar pelo valor das aquisições, pois estas são, na maior parte, livros modernos, fáceis de encontrar no mercado, ao passo que a destruição se dá, sobretudo, nos livros antigos."

Disse que a direcção da Biblioteca tem procurado atenuar o mal. "Infelizmente—observou—dispõe de poucos meios de defesa. Não há uma câmara de desinfecção, e as estantes, de madeira, anacrónicas, impróprias para limpeza, estão totalmente contaminadas."

Depois de lembrar como no estrangeiro se procura solucionar os problemas análogos, disse que o da Biblioteca Nacional tem outro aspecto grave: falta de espaço, referindo que "já não há, quasi, lugar para mais livros, e os corredores estão de tal forma atravancados com estantes, que, se houver um fogo, não escapa

nada." Afirmou que um patrimônio tão rico como o da Biblioteca—rico sob o aspecto cultural e rico sob o aspecto material, pois vale uma soma incalculável de milhares e milhares de contos—merece sacrifícios, acrescentando que este caso não é único, pois, segundo o Informou um ilustre professor, "a Biblioteca da Universidade de Coimbra tem, apesar da magnificência do decorativo, também, o seu drama. Ai, o inimigo não é o bicho. É a humidade."

O deputado falou, a seguir, do que se passa com o Museu da Marinha. Lembrando não haver na Europa, nem no Mundo, uma cidade de tradições náuticas mais belas de que Lisboa, disse ser doloroso ver o pouco cuidado que tem havido com as reliquias marítimas, que lá fora merecem todo o respeito. Recordou que Paris tem, desde 1827, o seu Museu Marítimo, e que Madrid cidade interior também tem o seu Museu desde 1844. "Entre nós, oficialmente, várias vezes se reconheceu a necessidade de encarar a sério este problema disse—mas as medidas tomadas foram quasi sempre puros platonismos." (O Século, 10/2/1940.)

HINTS FOR FURTHER STUDY

It is unlikely that the student who has mastered the grammar given in this Course will require much more. But, if he wishes to pursue his studies further, there is a book that can be recommended—*A Grammar of the Portuguese Language* by Joseph Dunn (David Nutt, London, 1930, and the Hispanic Society of America). The *Basics and Essentials of Portuguese* by Charles Duff is also useful.

Dictionaries. A good dictionary is essential, such as that by Michaëlis (Carolina de Vasconcellos). A Portuguese dictionary written for Portuguese and Brazilians is *Dicionário Prático Ilustrado* by Jayme de Ségur.

The *Lusiads*. There is an English version of the *Lusiads* of Camões by J. J. Aubertin, which has the Portuguese text opposite. This is an excellent reading book for the beginner. If he cannot find a copy, he should obtain from Portugal a text of the *Lusiads* prepared for young readers, with explanatory notes. A good one is *OS LUSIADAS para as escolas e para o povo* by José Agostinho.

General Reading. The next step is to form a general acquaintanceship with Portuguese literature, and the *História da Literatura Portuguesa* by Mendes dos Remédios is both a history and an anthology. With this book, the student can form his taste and seek out those works of most interest to him.

If a novel is to be read, then *A Selva* by Ferreira de Castro can be recommended; an English version of it appeared in 1934. The novel deals with life on a rubber plantation in North Brazil and it is, in its class, a masterpiece.

With these few hints, the student has open before him a great field of reading. Even though his studies be for purely commercial purposes, he must not neglect the literature. For their literature provides the key to the psychology of the Portuguese and Brazilian peoples, and the foreigner who is acquainted with it is infinitely better equipped than he who has ignored it.

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This is a general Index to all the wealth of information contained in five volumes and fifty Courses.

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